

# **INJ. PUMP CALIBRATION DATA**

## **Distributor-type**

MOTOR : NEW HA

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104640-0091 [NP-VE4/10F1900RNP51]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : 0.18~0.22 mm

BOSCH No.9 460 610 022

DKKC No. 104740-0111

Date : 20.Nov.1986 [0]

Company : MAZDA

No. SE0813000A

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	5.0~ 5.4 (mm)		
1-2 Supply pump pressure	1,500	5.7~ 6.3 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,000	53.1~54.1 (cc/1,000st)		3.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	10.8~14.8 (cc/1,000st)		2.5
1-5 Start	100	Above 78.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,100	19.1~25.1 (cc/1,000st)		
1-7				
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.9~ 5.5	1,900 7.0~ 8.2
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 2.3~ 2.9	1,500 5.7~ 6.3	1,900 7.1~ 7.7
2-3 Overflow delivery	N = rpm cc/10s	1,000 53.0~97.0		

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,000	52.6~54.6		
	500	45.6~49.6		
	1,500	50.3~54.3		
	1,900	46.4~50.4		
	2,100	19.1~25.1		
	2,200	Below 6.0		

Switch OFF	350	0		
Idling position	350 Below 620	10.8~14.8 0		

2-5 Solenoid	Max.cut-in voltage : 16 V Test voltage : 24~26 V			
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## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.7~1.9 mm
BCS	— mm

### **Control lever angle**

α	16.0~24.0 deg
A	4.4~ 9.6 mm
β	33.0~43.0 deg
B	10.5~13.8 mm
γ	— deg
C	— mm

# **INJ. PUMP CALIBRATION DATA**

## **Distributor-type**

MOTOR : NEW HA

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104640-0342 [NP-VE4/10F1900RNP51]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : 0.18~0.22 mm

BOSCH No.9 460 610 130

DKKC No. 104740-0112

Date : 20.Nov.1986 [0]

Company : MAZDA

No. SE0813800A

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	5.0~ 5.4 (mm)		
1-2 Supply pump pressure	1,500	5.7~ 6.3 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,000	53.1~54.1 (cc/1,000st)		3.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	10.8~14.8 (cc/1,000st)		2.5
1-5 Start	100	Above 78.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,100	19.1~25.1 (cc/1,000st)		5.5
1-7				
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.9~ 5.5	1,900 7.0~ 8.2
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	500 2.3~ 2.9	1,500 5.7~ 6.3	1,900 7.1~ 7.7
2-3 Overflow delivery	N = rpm cc/10s	1,000 53.0~97.0		

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,000	52.6~54.6		
	500	45.6~49.6		
	1,500	50.3~54.3		
	1,900	46.4~50.4		
	2,100	19.1~25.1		
	2,200	Below 6.0		

Switch OFF	350	0		
Idling position	350 Below 620	10.8~14.8 0		

2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			
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## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.7~1.9 mm
BCS	— mm

### **Control lever angle**

α	18.0~22.0 deg
A	35.9~38.6 mm
β	33.0~43.0 deg
B	10.2~13.9 mm
γ	— deg
C	— mm

**B - 2****INJ. PUMP CALIBRATION DATA**  
**Distributor-type**TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : NEW HA

Injection pump No: 104640-0343 (NP-VE4/10F1900RNP51)

Pump rotation : clockwise-viewed from drive side  
Pre-stroke : 0.18~0.22 mm

BOSCH No.9 460 610 182

DKKC No. 104740-0113

Date : 20.Nov.1986 0

Company : MAZDA

No. SE0813800B

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	5.0~ 5.4 (mm)		
1-2 Supply pump pressure	1,500	5.7~ 6.3 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,000	53.1~54.1 (cc/1,000st)		3.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	10.8~14.8 (cc/1,000st)		2.5
1-5 Start	100	Above 78.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,100	19.1~25.1 (cc/1,000st)		5.5
1-7				
1-8				

**2. Test Specifications**

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.9~ 5.5	1,900 7.0~ 8.2
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	500 2.3~ 2.9	1,500 5.7~ 6.3	1,900 7.1~ 7.7
2-3 Overflow delivery	N = rpm cc/10s	1,000 53.0~97.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,000	52.6~54.6		
	500	45.6~49.6		
	1,500	50.3~54.3		
	1,900	46.4~50.4		
	2,100	19.1~25.1		
	2,200	Below 6.0		
Switch OFF	350	0		
Idling position	350	10.8~14.8		
	Below 620	0		
2-5 Solenoid	Max.cut-in voltage : 16 V Test voltage : 24~26 V			

**3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm
Control lever angle		
α	18.0~22.0	deg
A	35.9~38.6	mm
β	33.0~43.0	deg
B	10.2~13.9	mm
γ	—	deg
C	—	mm

**DIESEL KIKI****DIESEL KIKI CO., LTD.**  
Service Department3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN  
Tel. (03) 400-1551 · Fax: (03) 499-4115

## INJ. PUMP CALIBRATION DATA Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : C223T

Injection pump No: 104640-1021 (NP-VE4/10F2150RNP259)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 100

DKKC No. 104740-1120

Date: 20.Nov.1986

Company: ISUZU

No. 894124 0578

For Test Condition see  
Microfiche No.WP-210(N16)

104740-1120

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.5~ 3.9 (mm)	0	
1-2 Supply pump pressure	1,250	4.6~ 5.0 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure		(cc/1,000st)		
Full load delivery with charge air pressure	1,250	47.8~48.8 (cc/1,000st)	590~610	4.0
1-4 Idle speed regulation	375	9.3~13.3 (cc/1,000st)	0	2.0
1-5 Start	100	Above 60 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,550	19.9~25.9 (cc/1,000st)	590~610	7.0
1-7 CSD Adjustment	500~700	Release speed		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,250 3.4~ 4.0	1,700 5.8~ 6.8	2,150 8.7~ 9.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	250 1.6~ 2.2	1,250 4.6~ 5.0	2,000 6.1~ 6.7
2-3 Overflow delivery	N = rpm cc/10s	1,000 40.8~84.2		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	47.3~49.3	590~610	
	600	34.1~39.1	0	
	900	42.7~44.7	290~310	
	1,150	46.5~51.5	590~610	
	1,250	34.1~39.1	0	
	2,000	38.4~43.4	590~610	
	2,175	36.7~41.7	590~610	
	2,550	19.4~26.4	590~610	
	2,800	Below 7	590~610	
Switch OFF	375	0		
Idling position	375	9.3~13.3	0	
	450	Below 3	0	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

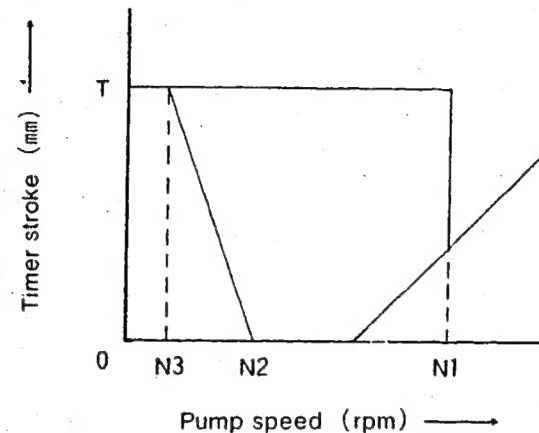
### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.5~1.7 mm
BCS	3.4~3.6 mm

#### Control lever angle

α	21.0~27.0 deg
A	9.2~11.0 mm
β	37.0~47.0 deg
B	12.0~15.0 mm
γ	— deg
C	— mm

### CSD Adjustment



Standard values

N1 (Release speed)	500~700rpm
N2	Less than 280rpm
T	2.3~2.7mm

#### 1) Bleed of air

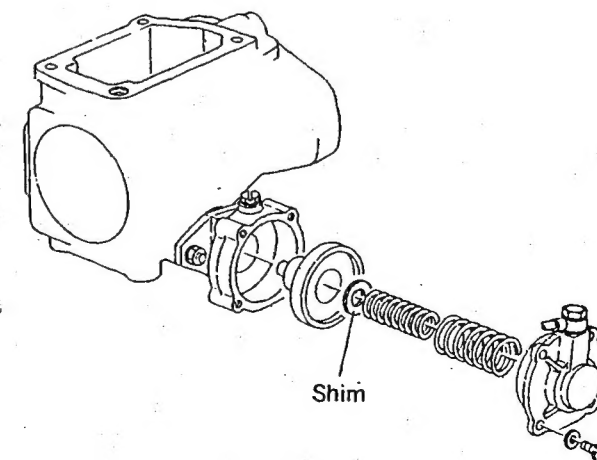
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

#### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $600 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : C223T

BOSCH No.9 460 610 101

DKKC No. 104740-1130

Date : 20.Nov.1986

Company : ISUZU

No. 894144 8490

For Test Condition see  
Microfiche No.WP-210(N16)

Injection pump No: 104640-1021 (NP-VE4/10F2150RNP259)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.5~ 3.9 (mm)	0	
1-2 Supply pump pressure	1,250	4.6~ 5.0 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure		(cc/1,000st)		
Full load delivery with charge air pressure	1,250	47.8~48.8 (cc/1,000st)	590~610	4.0
1-4 Idle speed regulation	375	9.3~13.3 (cc/1,000st)	0	2.0
1-5 Start	100	Above 60 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,550	19.9~25.9 (cc/1,000st)	590~610	7.0
1-7 CSD Adjustment	500~700	Release speed		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	1,250 3.4~ 4.0	1,700 5.8~ 6.8	2,150 8.7~ 9.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	250 1.6~ 2.2	1,250 4.6~ 5.0	2,000 6.1~ 6.7
2-3 Overflow delivery	N = rpm cc/10s	1,000 40.8~84.2		

## **2-4 Fuel injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	47.3~49.3	590~610	
	600	34.1~39.1	0	
	900	42.7~44.7	290~310	
	1,150	46.5~51.5	590~610	
	1,250	34.1~39.1	0	
	2,000	38.4~43.4	590~610	
	2,175	36.7~41.7	590~610	
	2,550	19.4~26.4	590~610	
	2,800	Below 7	590~610	
Switch OFF	375	0		
Idling position	375	9.3~13.3	0	
	450	Below 3	0	

## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.5~1.7 mm
BCS	3.4~3.6 mm

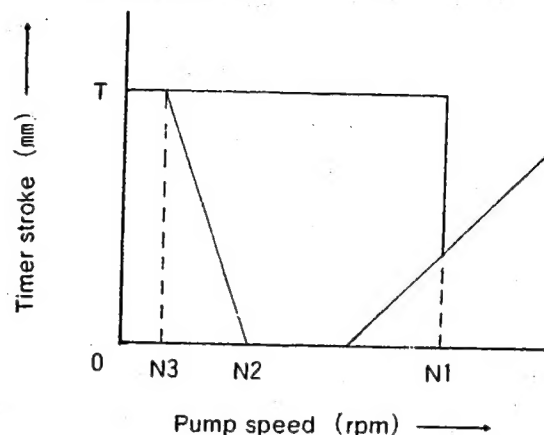
## **Control lever angle**

α	21.0~27.0 deg
A	9.2~11.0 mm
β	37.0~47.0 deg
B	12.0~15.0 mm
γ	— deg
C	— mm

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

104740-1130

## **■ CSD Adjustment**



Standard values

N1 (Release speed) ..... 500~700rpm  
N2 ..... Less than 280rpm  
T ..... 2.3~2.7mm

## **1) Bleed of air**

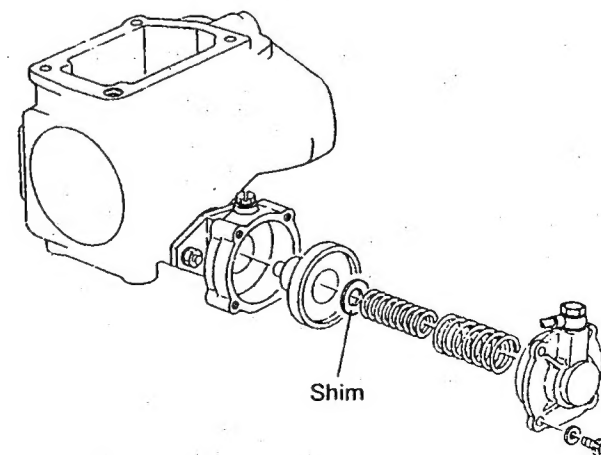
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

## **2) Adjustment**

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of 600±100 rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.





# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

ENGINE MODEL : C223T

BOSCH No.9 460 610 102

DKKC No. 104740-1140

Date : 20.Nov.1986 0

Company : ISUZU

No. 894144 8500

104740-1140

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104640-1021 [NP-VE4,10F2150RNP259]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.5~ 3.9 (mm)	0	
1-2 Supply pump pressure	1,250	4.6~ 5.0 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure				
Full load delivery with charge air pressure	1,250	47.8~48.8 (cc/1,000st)	590~610	4.0
1-4 Idle speed regulation	375	9.3~13.3 (cc/1,000st)	0	2.0
1-5 Start	100	Above 60 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,550	19.9~25.9 (cc/1,000st)	590~610	7.0
1-7 CSD Adjustment	500~700	Release speed		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	1,250 3.4~ 4.0	1,700 5.8~ 6.8	2,150 8.7~ 9.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	250 1.6~ 2.2	1,250 4.6~ 5.0	2,000 6.1~ 6.7
2-3 Overflow delivery	N = rpm cc/10s	1,000 40.8~84.2		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	47.3~49.3	590~610	
	600	34.1~39.1	0	
	900	42.7~44.7	290~310	
	1,150	46.5~51.5	590~610	
	1,250	34.1~39.1	0	
	2,000	38.4~43.4	590~610	
	2,175	36.7~41.7	590~610	
	2,550	19.4~26.4	590~610	
	2,800	Below 7	590~610	
Switch OFF	375	0		
Idling position	375 450	9.3~13.3 Below 3	0 0	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

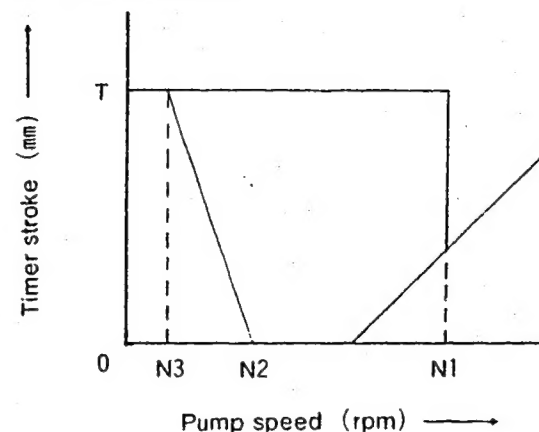
## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.5~1.7 mm
BCS	3.4~3.6 mm

### Control lever angle

α	21.0~27.0 deg
A	9.2~11.0 mm
β	37.0~47.0 deg
B	12.0~15.0 mm
γ	— deg
C	— mm

## **■ CSD Adjustment**



Standard values

N1 (Release speed) ..... 500~700rpm

N2 ..... Less than 280rpm

T ..... 2.3~2.7mm

## **1) Bleed of air**

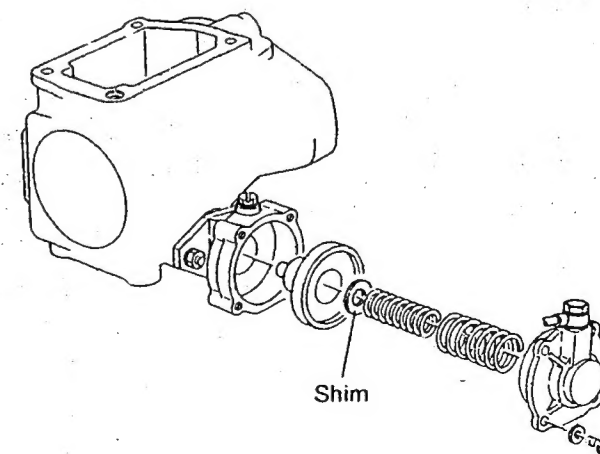
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

## **2) Adjustment**

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of 600±100 rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : LD20T

BOSCH No.9 460 610 103

DKKC No. 104740-2041

Date : 20.Nov.1986 0

Company : NISSAN

No. 16700 08E10

Injection pump No: 104640-2041 [NP-VE4/10F2400RMP201]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	900	2.3~2.9 (mm)	245~265	2.5
1-2 Supply pump pressure	900	2.9~3.5 (kg/cm <sup>2</sup> )	245~265	
1-3 Full load delivery without charge air pressure	600	29.9~30.9 (cc/1,000st)		
Full load delivery without charge air pressure	900	37.0~38.0 (cc/1,000st)		3.0
1-4 Idle speed regulation	325	4.5~7.5 (cc/1,000st)		
1-5 Start	100	40.0~50.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	6.7~12.7 (cc/1,000st)	500~520	
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm	900	1,200	2,400
	mm	2.2~3.0	3.6~4.8	8.9~9.8
2-2 Supply pump	N = rpm	900	1,200	2,400
	kg/cm <sup>2</sup>	2.8~3.6	3.4~4.2	6.5~7.3
2-3 Overflow delivery	N = rpm	1,000		
	cc/10s	36.0~80.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	29.4~31.4	0	
	900	36.5~38.5	245~265	
	2,200	35.0~40.0	500~520	
	2,700	6.2~13.2	500~520	
	2,800	Below 6	500~520	
Switch OFF	325	0		
Idling position	325	4.8		
Partial load	900	7~17	245~267	

2-5 Solenoid  
Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## 3. Dimensions

K	3.2~3.4	mm
KF	5.65~5.85	mm
MS	0.4~0.6	mm
BCS	3.9~4.1	mm

## Control lever angle

α	21.0~29.0	deg
A	7.6~11.7	mm
β	36.0~46.0	deg
B	11.2~14.6	mm
γ	10.5~11.5	deg
C	5.7~6.3	mm

## W-CSD Adjustment

### 1) Timer stroke adjustment

- Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
- Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

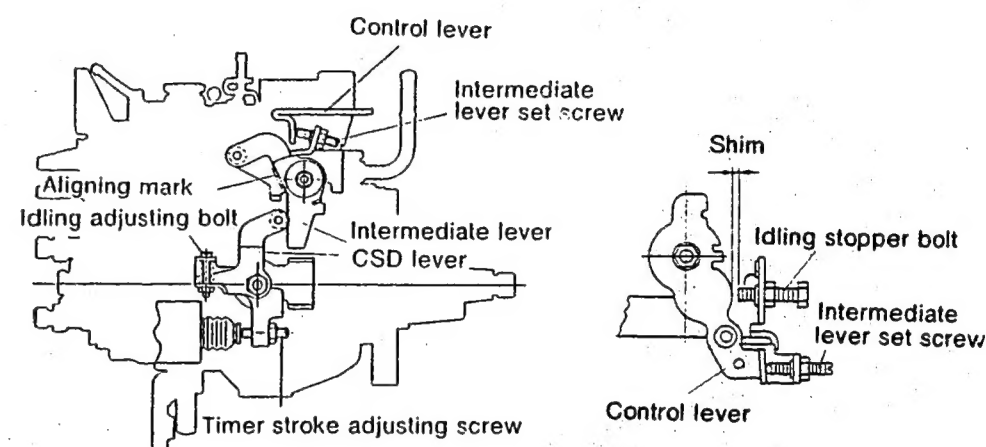


Fig. 1

### 2) Intermediate lever position adjustment

- Insert a block gauge (thickness gauge) of  $0.9 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
- Align the intermediate lever with the aligning mark.
- Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

### 3) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

#### Notes :

1. The temperature of the wax must be below  $30^\circ\text{C}$  when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (beacket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

#### Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0367t + 1.284$

When  $20 \leq t \leq 40$ :  $T = -0.0275t + 1.1$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $\ell = -0.0467t + 2.253$

When  $20 \leq t \leq 30$ :  $\ell = -0.0553t + 2.0664$

When  $30 \leq t \leq 40$ :  $\ell = -0.0148t + 0.8505$

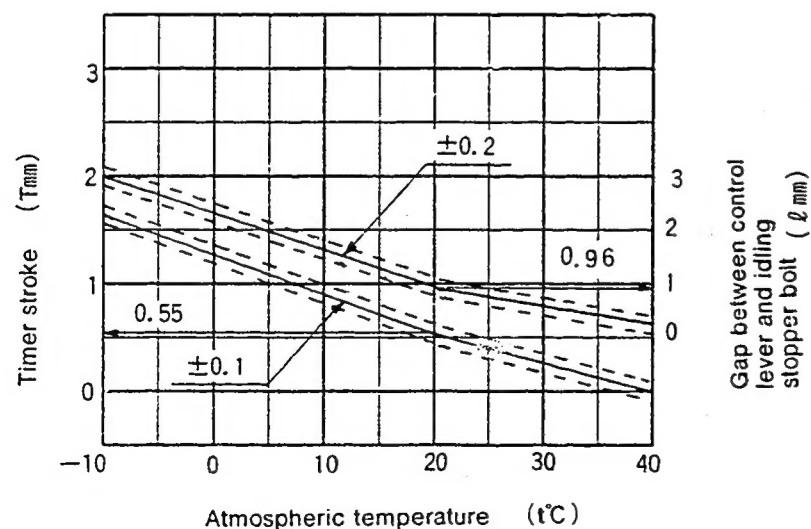
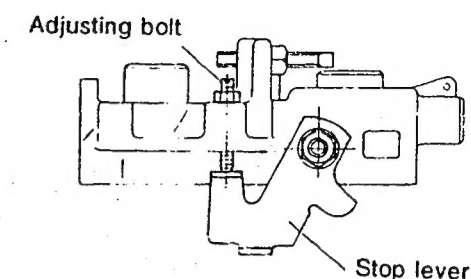


Fig. 2

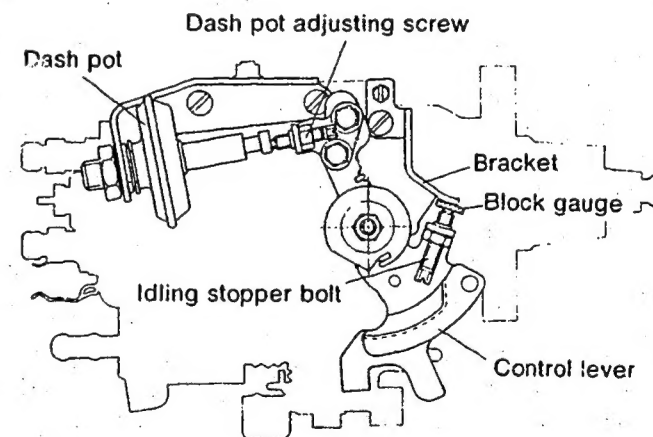
### Starting Injection Quantity Adjustment

Adjust the starting injection quantity (item 1/5) using the adjusting bolt (as shown in the figure at right).



### DASH POT ADJUSTMENT

- ① Insert a block gauge (thickness gauge) of thickness  $3.8 \pm 0.05$  in the gap between the control lever and the idling stopper bolt.
- ② With the control lever positioned as described in ① above, adjust the Dashpot adjusting screw so that the Dashpot adjusting screw and the push rod are in contact. Fix using the nut.



# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

MOTOR : CD17T

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-2051 [NP-VE4/10F2400LNP210]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 125

DKKC No. 104740-2051

Date : 20.Nov.1986 1

Company : NISSAN

No. 16700 D2700

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting		Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1	Timing device travel	1,000	1.7~ 2.3 (mm)	310~330	2.5
1-2	Supply pump pressure	1,000	2.6~ 3.2 (kg/cm <sup>2</sup> )	310~330	
1-3	Full load delivery without charge air pressure	600	25.3~26.3 (cc/1,000st)	0	
	Full load delivery with charge air pressure	800	28.1~29.1 (cc/1,000st)	140~160	3.0
1-4	Idle speed regulation	400	5.3~ 8.3 (cc/1,000st)		
1-5	Start	100	42.8~52.8 (cc/1,000st)		
1-6	Full-load speed regulation	2,700	9.5~15.5 (cc/1,000st)	540~560	
1-7					
1-8					

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.4	1,800 4.7~ 5.9	2,400 6.1~ 7.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 2.5~ 3.3	1,800 4.3~ 5.1	2,400 5.7~ 6.5
2-3 Overflow delivery	N = rpm cc/10s	1,000 36.0~80.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	24.8~26.8	0	
	800	27.6~29.6	140~160	
	2,400	32.9~37.9	540~560	
	2,700	9.0~16.0	540~560	
	2,800	Below 6.0	540~560	
Switch OFF	400	0	0	
Idling position	400	4.8~8.8	0	
Partial load	800	12.5~22.5	0	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## **3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.9~1.1	mm
BCS	—	mm

### **Control lever angle**

α	20.0~28.0	deg
A	3.2~ 8.3	mm
β	39.0~49.0	deg
B	11.5~15.5	mm
γ	10.5~11.5	deg
C	6.7~ 7.3	mm

○ Note

■ After adjustment of full load fuel injection quantity (600rpm) , set the boost pressure at 140~160 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 800 rpm adjust the fuel injection quantity using the BCS spring set screw.



■ W-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

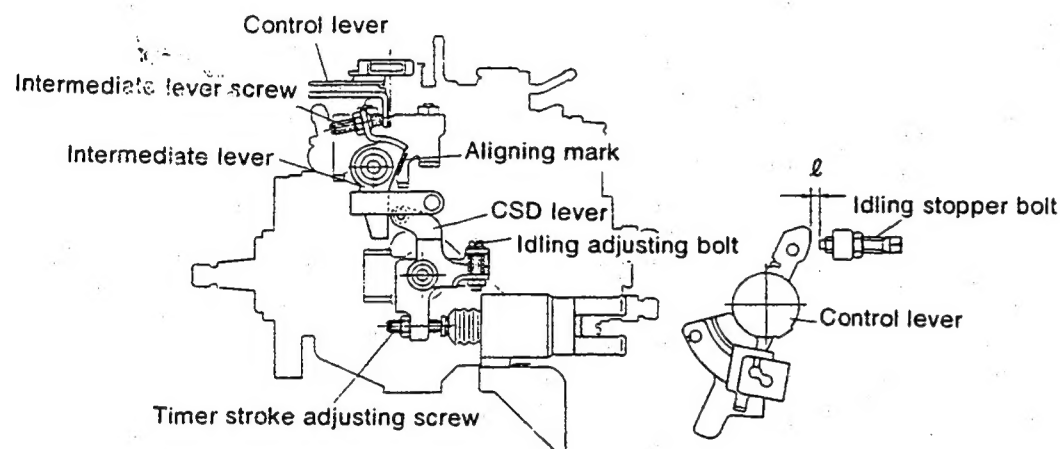


Fig. 1

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.9 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension  $l \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

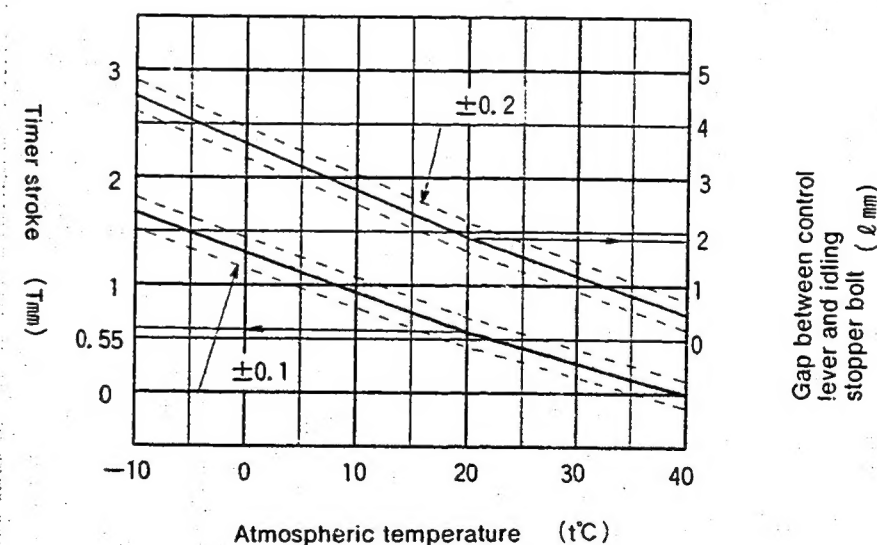
When  $-10 \leq t \leq 20$ :  $T = -0.0367t + 1.284$

When  $20 \leq t \leq 40$ :  $T = -0.0275t + 1.1$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $l = -0.0867t + 3.63$

When  $20 \leq t \leq 40$ :  $l = -0.075t + 3.4$



## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : LD20T

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-2060 (NP-VE4/10F2400RNP408)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 132

DKKC No. 104740-2060

Date : 20.Nov.1986 ①

Company : NISSAN

No. 1670013C00

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	900	T=1.0~1.4 (mm)	255~275	2.5
1-2 Supply pump pressure	900	3.2~3.8 (kg/cm <sup>2</sup> )	255~275	
1-3 Full load delivery without charge air pressure	600	29.7~30.7 (cc/1,000st)	0	
Full load delivery with charge air pressure	900	39.5~40.5 (cc/1,000st)	255~275	2.5
1-4 Idle speed regulation	325	4.1~7.1 (cc/1,000st)	0	
1-5 Start	100	40.0~50.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,700	6.7~12.7 (cc/1,000st)	474~494	
1-7 Load-timer Adjustment	900	T=0.65±0.2mm		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	900 0.9~1.5	1,200 2.8~3.6	2,400 8.1~9.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	900 3.1~3.9	1,200 3.8~4.6	2,400 6.9~7.7
2-3 Overflow delivery	N = rpm cc/10s	900 41.0~86.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	29.2~31.2	0	
	900	39.0~41.0	255~275	
	2,200	34.8~38.8	490~510	
	2,700	5.2~12.2	474~494	
	2800	Below 6.0	474~494	
Switch OFF	325	0	0	
Idling position	325 500	3.6~7.6 Below 3.0	0 0	
Partial load	900	2.0~12.0	255~275	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## 3. Dimensions

K	3.20~3.40 mm
KF	5.65~5.85 mm
MS	0.80~1.00 mm
BCS	— mm

## Control lever angle

α	21.0~29.0 deg
A	4.3~9.6 mm
β	36.0~46.0 deg
B	10.9~14.6 mm
γ	10.5~11.5 deg
C	6.9~7.5 mm

## ○ Note

- After adjustment of full load fuel injection quantity (600rpm), set the boost pressure at 255~275 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 900 rpm adjust the fuel injection quantity using the BCS spring set screw.

## ■ LOAD TIMER ADJUSTMENT

## 1) Adjustment

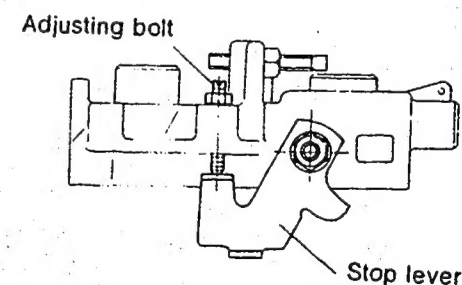
- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg  
Pump Speed : 900 rpm  
Fuel Injection : 17±1 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

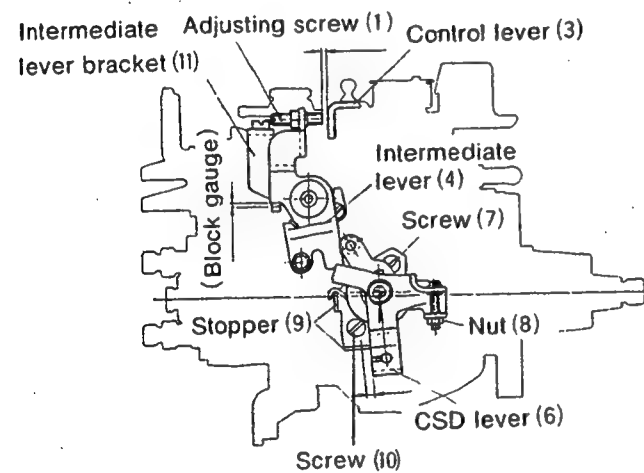
## ■ Starting Injection Quantity Adjustment

Adjust the starting injection quantity (item 1/5) using the adjusting bolt (as shown in the figure at right).



■ M-CSD Adjustment

- 1) Fix the intermediate lever adjustment screw in position. (Adjust with the M-CSD released)
  1. Hold the control lever (3) in the idling position.
  2. Move the adjusting screw to a horizontal position.
  3. Adjust using the adjusting screw (1) so that the gap between the control lever (3) and the adjusting screw (1) is  $1 \sim 2$  mm, and then fix using the nut.



2) Fixing the M-CSD stopper (9)

1. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
2. Move the CSD lever (6) to the advance side.
3. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
4. Move the CSD lever to the advance side.
5. Then, adjust the position of the stopper (9) so that the timer stroke is  $1.2 \pm 0.2$  mm, and fix the stopper (9) using the screw (10).

3) Screw (7) Adjustment

1. Fix the control lever in the idling position.
2. Move the CSD lever to the advance side.
3. Then, adjust the screw (7) so that the clearance between the control lever and the idling stopper bolt is  $7.2 \pm 0.5$  mm, and fix the screw (7) using the nut (8).

## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : LD20T

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104640-2070 [NP-VE4/10F2400RNP409]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 133

DKKC No. 104740-2070

Date : 20.Nov.1986

Company : NISSAN

No. 1670013C10

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	900	T=1.0~ 1.4 (mm)	255~275	
1-2 Supply pump pressure	900	3.2~ 3.8 (kg/cm <sup>2</sup> )	255~275	
1-3 Full load delivery without charge air pressure	600	29.7~30.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	900	39.5~40.5 (cc/1,000st)	255~275	
1-4 Idle speed regulation	325	4.1~ 7.1 (cc/1,000st)	0	2.5
1-5 Start	100	40.0~50.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,700	6.7~12.7 (cc/1,000st)	474~494	
1-7 Load-timer Adjustment	900	T=0.65±0.2mm		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	900 0.5~ 1.5	1,200 2.8~ 3.6	2,400 8.1~ 9.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	900 3.1~ 3.9	1,200 3.8~ 4.6	2,400 6.9~ 7.7
2-3 Overflow delivery	N = rpm cc/10s	900 41.0~86.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	29.2~31.2	0	
	900	39.0~41.0	255~275	
	2,200	34.8~38.8	490~510	
	2,700	5.2~12.2	474~494	
	2800	Below 6.0	474~494	
Switch OFF	325	0	0	
Idling position	325	3.6~7.6	0	
	500	Below 3.0	0	
Partial load	900	2.0~12.0	255~275	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## 3. Dimensions

K	3.20~3.40 mm
KF	5.65~5.85 mm
MS	0.80~1.00 mm
BCS	— mm

## Control lever angle

α	21.0~29.0 deg
A	4.3~ 9.6 mm
β	36.0~46.0 deg
B	10.9~14.6 mm
γ	10.5~11.5 deg
C	6.9~ 7.5 mm

## ○ Note

- After adjustment of full load fuel injection quantity (600rpm) , set the boost pressure at 255~275 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 900 rpm adjust the fuel injection quantity using the BCS spring set screw.

## ■ LOAD TIMER ADJUSTMENT

## 1) Adjustment

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

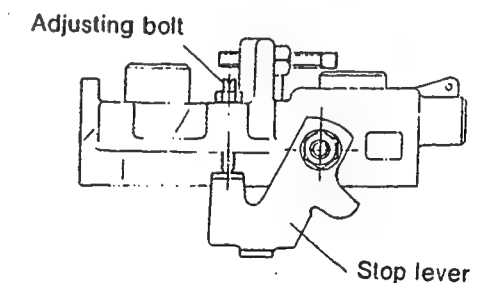
Pump Speed : 900 rpm

Fuel Injection : 17±1 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

## ■ Starting Injection Quantity Adjustment

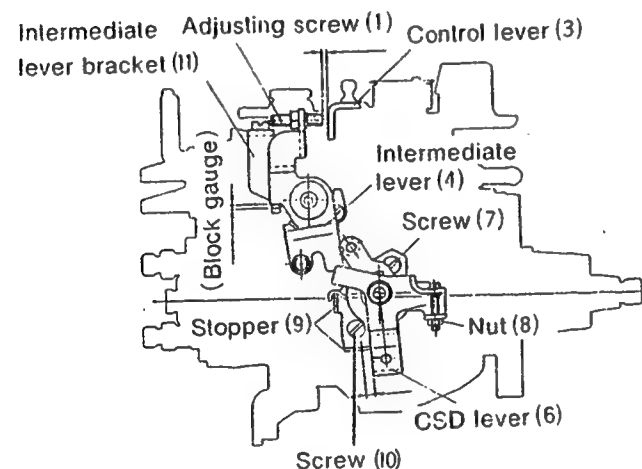
Adjust the starting injection quantity (item 1/5 ) using the adjusting bolt (as shown in the figure at right) .



■ M-CSD Adjustment

1) Fix the intermediate lever adjustment screw in position. (Adjust with the M-CSD released)

1. Hold the control lever (3) in the idling position.
2. Move the adjusting screw to a horizontal position.
3. Adjust using the adjusting screw (1) so that the gap between the control lever (3) and the adjusting screw (1) is  $1 \sim 2$  mm, and then fix using the nut.



2) Fixing the M-CSD stopper (9)

1. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
2. Move the CSD lever (6) to the advance side.
3. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
4. Move the CSD lever to the advance side.
5. Then, adjust the position of the stopper (9) so that the timer stroke is  $1.2 \pm 0.2$  mm, and fix the stopper (9) using the screw (10).

3) Screw (7) Adjustment

1. Fix the control lever in the idling position.
2. Move the CSD lever to the advance side.
3. Then, adjust the screw (7) so that the clearance between the control lever and the idling stopper bolt is  $7.2 \pm 0.5$  mm, and fix the screw (7) using the nut (8).



## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : LD20T

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104640-2080 [NP-VE4/10F2400RNP434]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

1/4  
BOSCH No.9 460 610 204  
DKKC No. 104740-2080  
Date : 20.Nov.1986 [0]  
Company : NISSAN  
No. 16700 06N00For Test Condition see  
Microfiche No.WP-210(N16)

104740-2080 2/4

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	900	1.0~ 1.4 (mm)	255~275	2.5
1-2 Supply pump pressure	900	3.2~ 3.8 (kg/cm <sup>2</sup> )	255~275	
1-3 Full load delivery without charge air pressure	600	29.7~30.7 (cc/1,000st)	0	
Full load delivery with charge air pressure	900	39.5~40.5 (cc/1,000st)	255~275	2.5
1-4 Idle speed regulation	325	4.1~ 7.1 (cc/1,000st)	0	
1-5 Start	100	40.0~50.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,700	6.7~12.7 (cc/1,000st)	474~494	
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	900 0.9~ 1.5	1,200 2.8~ 3.6	2,400 8.1~ 9.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	900 3.1~ 3.9	1,200 3.8~ 4.6	2,400 6.9~ 7.7
2-3 Overflow delivery	N = rpm cc/10s	900 41.0~36.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	29.2~31.2	0	
	900	39.0~41.0	255~275	
	2,200	34.8~38.8	490~510	
	2,700	5.2~12.2	474~494	
	2800	Below 6.0	474~494	
Switch OFF	325	0		
Idling position	325	3.6~7.6		
	500	Below 3.0		
Partial load	900	2.0~12.0	255~275	

2-5 Solenoid  
Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## 3. Dimensions

K	3.20~3.40 mm
KF	5.65~5.85 mm
MS	0.80~1.00 mm
BCS	— mm

## Control lever angle

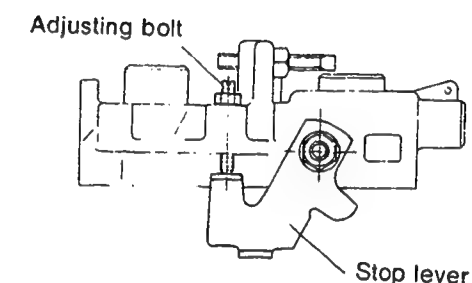
α	21.0~29.0 deg
A	4.3~ 9.6 mm
β	36.0~46.0 deg
B	10.9~14.6 mm
γ	10.5~11.5 deg
C	6.9~ 7.5 mm

○ Note

■ After adjustment of full load fuel injection quantity (600rpm) , set the boost pressure at 255~275 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 900 rpm adjust the fuel injection quantity using the BCS spring set screw.

## ■ Starting Injection Quantity Adjustment

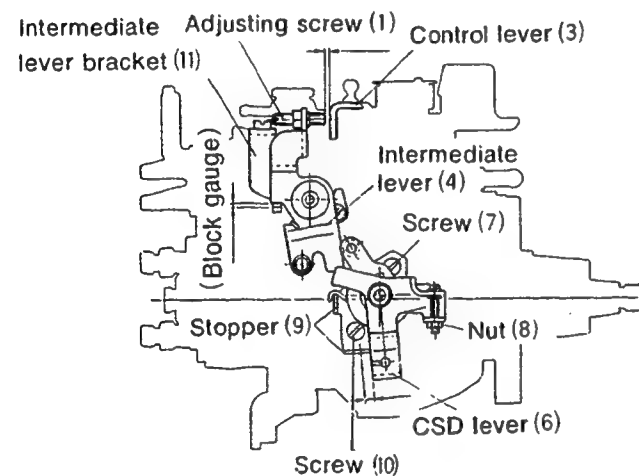
Adjust the starting injection quantity (item 1/5 ) using the adjusting bolt (as shown in the figure at right) .



■ M-CSD Adjustment

1) Fix the intermediate lever adjustment screw in position. (Adjust with the M-CSD released)

1. Hold the control lever (3) in the idling position.
2. Move the adjusting screw to a horizontal position.
3. Adjust using the adjusting screw (1) so that the gap between the control lever (3) and the adjusting screw (1) is  $1 \sim 2$  mm, and then fix using the nut.



2) Fixing the M-CSD stopper (9)

1. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
2. Move the CSD lever (6) to the advance side.
3. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
4. Move the CSD lever to the advance side.
5. Then, adjust the position of the stopper (9) so that the timer stroke is  $1.2 \pm 0.2$  mm, and fix the stopper (9) using the screw (10).

3) Screw (7) Adjustment

1. Fix the control lever in the idling position.
2. Move the CSD lever to the advance side.
3. Then, adjust the screw (7) so that the clearance between the control lever and the idling stopper bolt is  $7.2 \pm 0.5$  mm, and fix the screw (7) using the nut (8).

## INJ. PUMP CALIBRATION DATA

TEST OIL:  
I S O 4113 or  
S A E J967d

**Distributor-type**

MOTOR : 4D55T

BOSCH No.9 460 610 032

DKKC No. 104740-3090

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD060177

104740-3090

Injection pump No: 104640-3060 [NP-VE4/10F2100RNP149]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	1.1~ 1.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	850 1.1~ 1.5	1,750 6.1~ 7.3	2,100 7.8~ 8.6
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 58~102		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	32.2~34.2	0	
	750	35.7~37.7	100~120	
	1,250	49.3~53.3	468~488	
	2,100	42.8~47.8	615~635	
	2,650	18.1~26.1	615~635	
	3,050	Below 10	615~635	
Switch OFF	375	0		
Idling position	600	Below 3		
	375	6.4~10.4		
Partial load	600	14.5~26.5		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	0.8~1.0 mm
BCS	4.4~4.6 mm

#### Control lever angle

α	55.0~63.0 deg
A	— mm
β	41.0~51.0 deg
B	— mm
γ	11.5~12.5 deg
C	— mm

○ Note

■ After adjustment of full load injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.



**DIESEL KIKI**

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## INJ. PUMP CALIBRATION DATA

## Distributor-type

ENGINE MODEL : 4D55T

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-3060 [NP-VE4/10F2100RNP149]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 035

DKKC No. 104740-3210

Date : 20.Nov.1986 ①

Company : MITSUBISHI

No. MD 064705

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3210

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	1.1~ 1.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

## 2. Test Specifications

2-1	Timing device	N = rpm mm	850 1.1~ 1.5	1,750 6.1~ 7.3	2,100 7.8~ 8.6
2-2	Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1
2-3	Overflow delivery	N = rpm cc/10s	1,250 58~102		
2-4	Fuel injection quantities				
	Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
	Full speed position	600	32.2~34.2	0	
		750	35.7~37.7	100~120	
		1,250	49.3~53.3	468~488	
		2,100	42.8~47.8	615~635	
		2,650	18.1~26.1	615~635	
		3,050	Below 10	615~635	
	Switch OFF	375	0		
	Idling position	600	Below 3		
		375	6.4~10.4		
	Partial load	600	14.5~26.5		
2-5	Max.cut-in voltage : 8 V				
Solenoid	Test voltage : 12~14 V				

3. Dimensions		
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm
Control lever angle		
α A	55.0~63.0	deg mm
β B	41.0~51.0	deg mm
γ C	11.5~12.5	deg mm

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

## Control lever angle

α	55.0~63.0	deg
A		mm
β	41.0~51.0	deg
B		mm
γ	11.5~12.5	deg
C		mm

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm), set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

## INJ. PUMP CALIBRATION DATA

## Distributor-type

ENGINE MODEL : 4D55T

TEST OIL:  
! S O 4113 or  
S A E J967d

Injection pump No: 104640-3060 (NP-VE4/10F2100RNP149)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 036

DKKC No. 104740-3220

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD 064706

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3220

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	1.1~ 1.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load deliver, with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	850 1.1~ 1.5	1,750 6.1~ 7.3	2,100 7.8~ 8.6
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 58~102		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	32.2~34.2	0	
	750	35.7~37.7	100~120	
	1,250	49.3~53.3	468~488	
	2,100	42.8~47.8	615~635	
	2,650	18.1~26.1	615~635	
	3,050	Below 10	615~635	
Switch OFF	375	0		
Idling position	600	Below 3		
	375	6.4~10.4		
Partial load	600	14.5~26.5		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

## Control lever angle

α	55.0~63.0	deg
A		mm
β	41.0~51.0	deg
B		mm
γ	11.5~12.5	deg
C		mm

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.



**INJ. PUMP CALIBRATION DATA****Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR : 4D55T

Injection pump No: 104640-3011 [NP-VE4/10F2100RNP30]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 037

DKKC No. 104740-3250

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD067627

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

2. Test Specifications	Solenoid Timer	ON	OFF
2-1 Timing device	N = rpm mm	850 3.1~ 3.5	1,750 8.1~ 9.3
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 95~148	2,100 6.5~ 7.1
2-4 Fuel injection quantities			
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)
Full speed position	600	32.2~34.2	0
	750	35.7~37.7	100~120
	1,250	49.3~53.3	468~488
	2,100	42.8~47.8	615~635
	2,650	18.1~26.1	615~635
	3,050	Below 10	615~635
Switch OFF	375	0	
Idling position	600	Below 3	
	375	6.4~10.4	
Partial load	600	14.5~26.5	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V		

**3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

**Control lever angle**

α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

○ Note

■ RUN the pump at 1750rpm, and switch the solenoid timer ON-OFF five or six times to check that it operates properly.

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

○ Note

■ If there is no designation in the specifications Solenoid Timer ON-OFF position, then the position should be regarded ON.

# ■ Accelerator Switch Installation Adjustment

1. Insert a block gauge (thickness gauge) of 5.2 mm thickness between the fall speed stopper bolt and control lever.
2. With the control lever in the position described in step 1, adjust the installation position of the accelerator switch, and set it so that it can change from OFF to ON.

# 2) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever roller and control lever are in contact.

# ■ W-CSD Adjustment

## 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

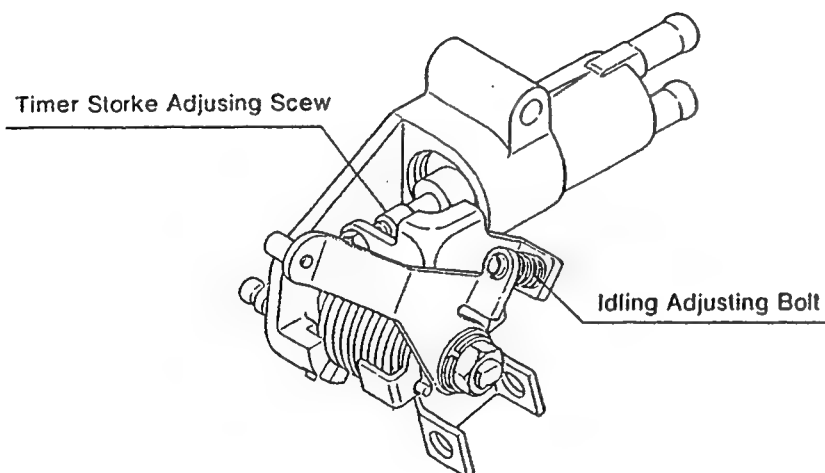


Fig. 1

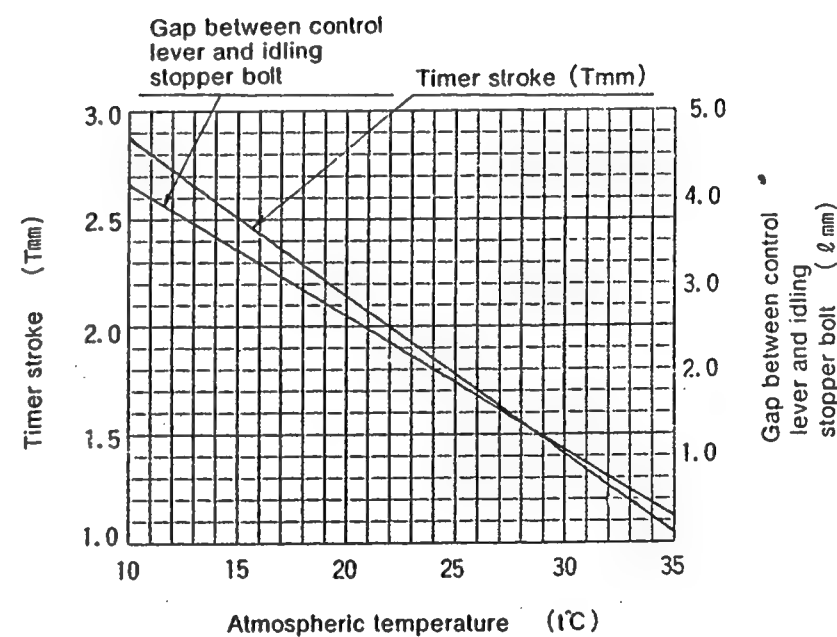


Fig. 2

## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : 4D55T

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-3011 [NP-VE4/10F2100RNP30]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

1/4  
BOSCH No.9 460 610 038

DKKC No. 104740-3260

Date : 20.Nov.1986 [0]

Company : MITSUBISHI

No. MD067628

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3260 2/4

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

2. Test Specifications		Solenoid Timer	ON		OFF
2-1	Timing device	N = rpm mm	850 3.1~ 3.5	1,750 8.1~ 9.3	2,100 9.9~10.7 1,750 4.8~ 6.0
2-2	Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1
2-3	Overflow delivery	N = rpm cc/10s	1,250 95~148		
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	600	32.2~34.2	0		
	750	35.7~37.7	100~120		
	1,250	49.3~53.3	468~488		
	2,100	42.8~47.8	615~635		
	2,650	18.1~26.1	615~635		
	3,050	Below 10	615~635		
Switch OFF	375	0			
Idling position	600	Below 3			
	375	6.4~10.4			
Partial load	600	14.5~26.5			
2-5	Solenoid Max.cut-in voltage : 8 V Test voltage : 12~14 V				

3. Dimensions		
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm
Control lever angle		
α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

## Control lever angle

α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

○ Note

■ RUN the pump at 1750rpm, and switch the solenoid timer ON-OFF five or six times to check that it operates properly.

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

○ Note

■ If there is no designation in the specifications Solenoid Timer ON-OFF position, then the position should be regarded ON.

# ■ Accelerator Switch Installation Adjustment

1. Insert a block gauge (thickness gauge) of 5.2 mm thickness between the fall speed stopper bolt and control lever.
2. With the control lever in the position described in step 1, adjust the installation position of the accelerator switch, and set it so that it can change from OFF to ON.

# ■ W-CSD Adjustment

## 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

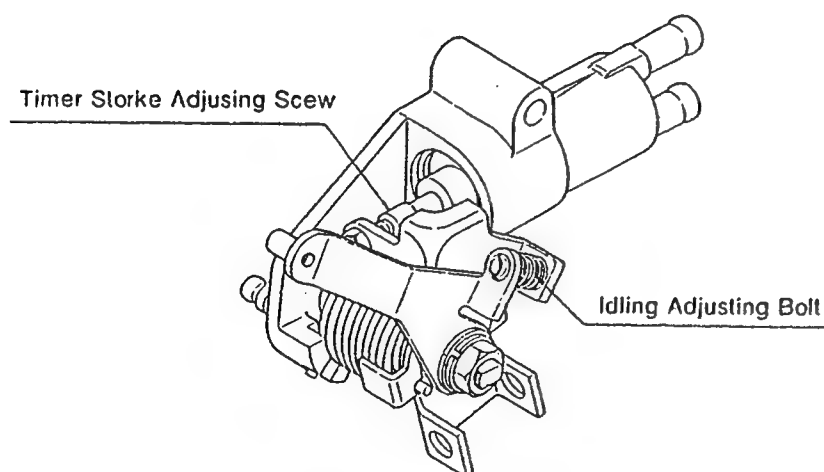


Fig. 1

## 2) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever roller and control lever are in contact.

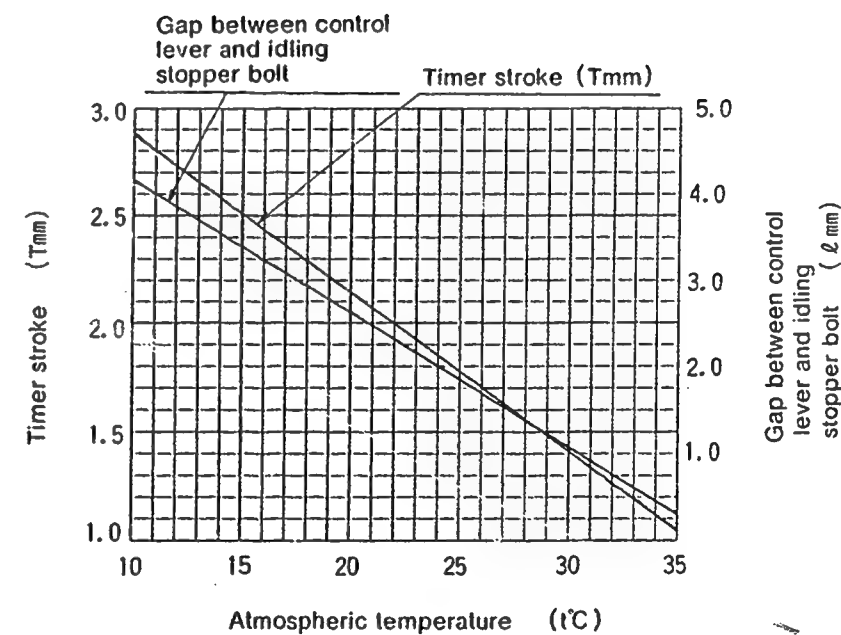


Fig. 2

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : 4D55T

Injection pump No: 104640-3031 (NP-VE4/10F2100RNP76)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 039

DKKC No. 104740-3270

Date : 20.Nov.1986 ①

Company : MITSUBISHI

No. MD067629

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

2. Test Specifications		Solenoid Timer	ON		OFF
2-1	Timing device	N = rpm mm	850 3.1~ 3.5	1,750 8.1~ 9.3	2,100 9.9~10.7 1,750 4.8~ 6.0
2-2	Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1
2-3	Overflow delivery	N = rpm cc/10s	1,250 95~148		
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	600	32.2~34.2	0		
	750	35.7~37.7	100~120		
	1,250	49.3~53.3	468~488		
	2,100	42.8~47.8	615~635		
	2,650	18.1~26.1	615~635		
	3,050	Below 10	615~635		
Switch OFF	375	0			
Idling position	600	Below 3			
	375	6.4~10.4			
Partial load	600	14.5~26.5			
2-5	Max.cut-in voltage : 8 V				
Solenoid	Test voltage : 12~14 V				

3. Dimensions		
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm
Control lever angle		
α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

### Control lever angle

α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

○ Note

■ RUN the pump at 1750rpm, and switch the solenoid timer ON-OFF live or six times to check that it operates properly.

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

○ Note

■ If there is no designation in the specifications Solenoid Timer ON-OFF position, then the position should be regarded ON.



# ■ Accelerator Switch Installation Adjustment

1. Insert a block gauge (thickness gauge) of 5.2 mm thickness between the fall speed stopper bolt and control lever.
2. With the control lever in the position described in step 1, adjust the installation position of the accelerator switch, and set it so that it can change from OFF to ON.

# ■ W-CSD Adjustment

## 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

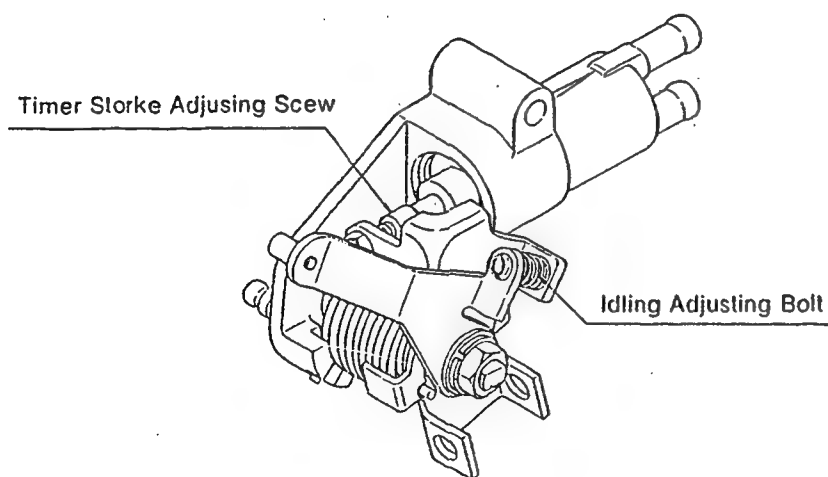


Fig. 1

## 2) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever roller and control lever are in contact.

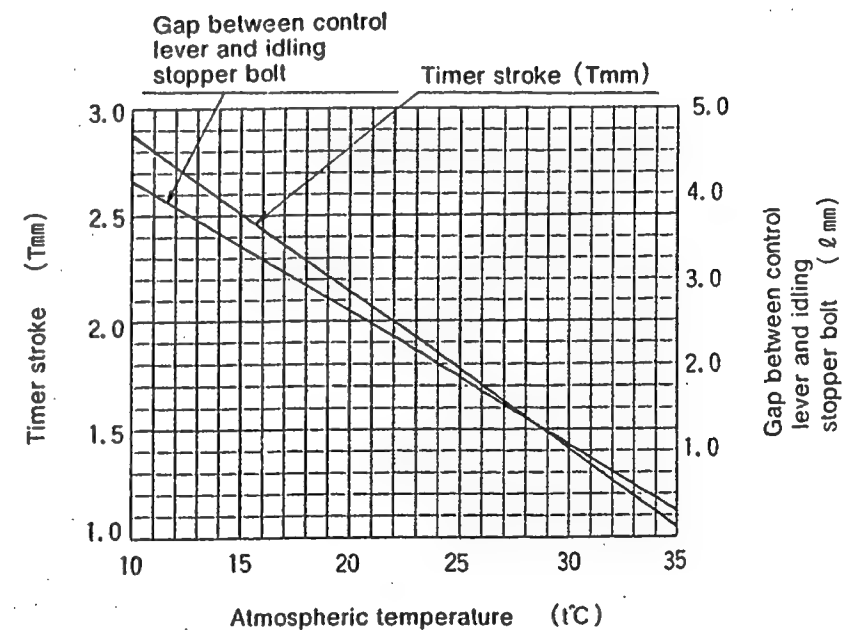


Fig. 2

# INJ. PUMP CALIBRATION DATA

## Distributor-type

TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR: 4D55T

Injection pump No: 104640-3031 [NP-VE4/10F2100RNP76]

Pump rotation: clockwise-viewed from drive side

Pre-stroke: — mm

1/4  
BOSCH No.9 460 610 040

DKKC No. 104740-3280

Date: 20.Nov.1986

Company: MITSUBISHI

No. MD067630

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

2. Test Specifications	Solenoid Timer	ON	OFF
2-1 Timing device	N = rpm mm	850 3.1~ 3.5	1,750 8.1~ 9.3
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 95~148	2,100 9.9~10.7
2-4 Fuel injection quantities			
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)
Full speed position	600	32.2~34.2	0
	750	35.7~37.7	100~120
	1,250	49.3~53.3	468~488
	2,100	42.8~47.8	615~635
	2,650	18.1~26.1	615~635
	3,050	Below 10	615~635
Switch OFF	375	0	
Idling position	600	Below 3	
	375	6.4~10.4	
Partial load	600	14.5~26.5	
2-5 Solenoid	Max.cut-in voltage: 3 V Test voltage: 12~14 V		

### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	0.8~1.0 mm
BCS	4.4~4.6 mm

#### Control lever angle

α	55.0~63.0 deg
A	— mm
β	41.0~51.0 deg
B	— mm
γ	11.5~12.5 deg
C	— mm

○ Note

■ RUN the pump at 1750rpm, and switch the solenoid timer ON-OFF five or six times to check that it operates properly.

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm), set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

○ Note

■ If there is no designation in the specifications Solenoid Timer ON-OFF position, then the position should be regarded ON.

## Accelerator Switch Installation Adjustment

1. Insert a block gauge (thickness gauge) of 5.2 mm thickness between the fall speed stopper bolt and control lever.
2. With the control lever in the position described in step 1, adjust the installation position of the accelerator switch, and set it so that it can change from OFF to ON.

## W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

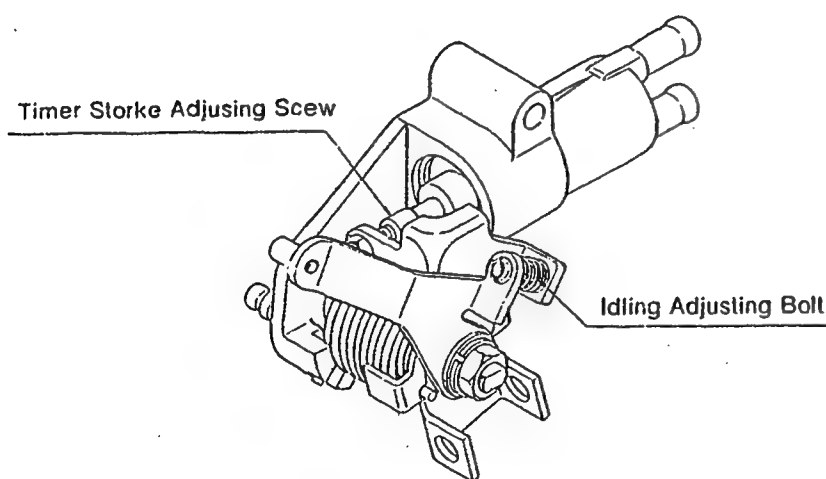


Fig. 1

### 2) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever roller and control lever are in contact.

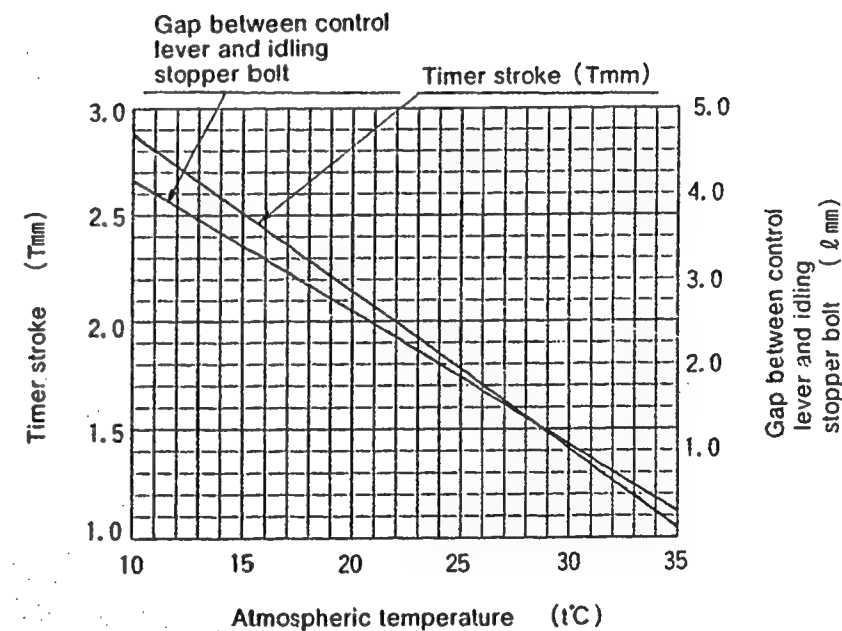


Fig. 2

**INJ. PUMP CALIBRATION DATA****Distributor-type**TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR : 4D55T

BOSCH No.9 460 610 041

DKKC No. 104740-3320

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD071530

Injection pump No: 104640-3130 [NP-VE4/10F2100RNP30]

Pump rotation : clockwise-viewed from drive side

For Test Condition see  
Microfiche No.WP-210(N16)

Pre-stroke : — mm

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

2. Test Specifications		Solenoid Timer	ON		OFF
2-1 Timing device	N = rpm mm	850 3.1~ 3.5	1,750 8.1~ 9.3	2,100 9.9~10.7	1,750 4.8~ 6.0
2-2 Supply pump	N = rpm kg/cm²	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 95~148			
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	600	32.2~34.2	0		
	750	35.7~37.7	100~120		
	1,250	49.3~53.3	468~488		
	2,100	42.8~47.8	615~635		
	2,650	18.1~26.1	615~635		
	3,050	Below 10	615~635		
Switch OFF	375	0			
Idling position	600	Below 3			
	375	6.4~10.4			
Partial load	600	14.5~26.5			
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V				

3. Dimensions		
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm
Control lever angle		
α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

**3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

**Control lever angle**

α	55.0~63.0	deg
A	—	mm
β	41.0~51.0	deg
B	—	mm
γ	11.5~12.5	deg
C	—	mm

○ Note

■ RUN the pump at 1750rpm, and switch the solenoid timer ON-OFF five or six times to check that it operates properly.

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

○ Note

■ If there is no designation in the specifications Solenoid Timer ON-OFF position, then the position should be regarded ON.

**DIESEL KIKI****DIESEL KIKI CO., LTD.**

Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN

Tel. (03) 400-1551 • Fax: (03) 499-4115

## Accelerator Switch Installation Adjustment

1. Insert a block gauge (thickness gauge) of 5.2 mm thickness between the fall speed stopper bolt and control lever.
2. With the control lever in the position described in step 1, adjust the installation position of the accelerator switch, and set it so that it can change from OFF to ON.

## W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

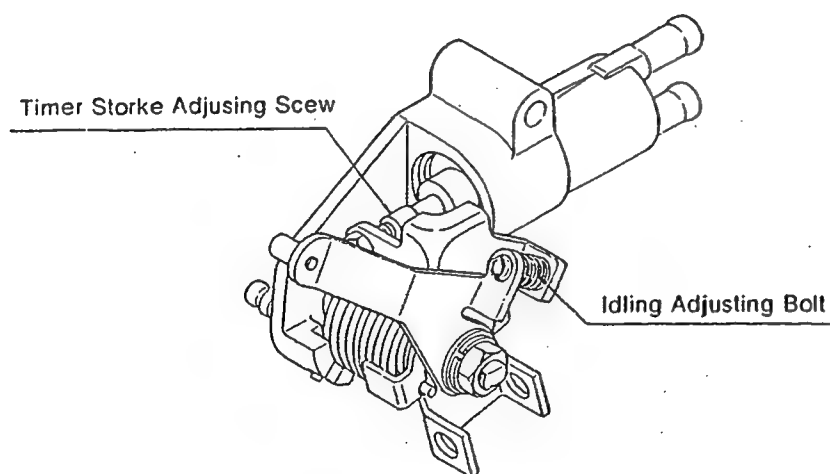


Fig. 1

### 2) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever roller and control lever are in contact.

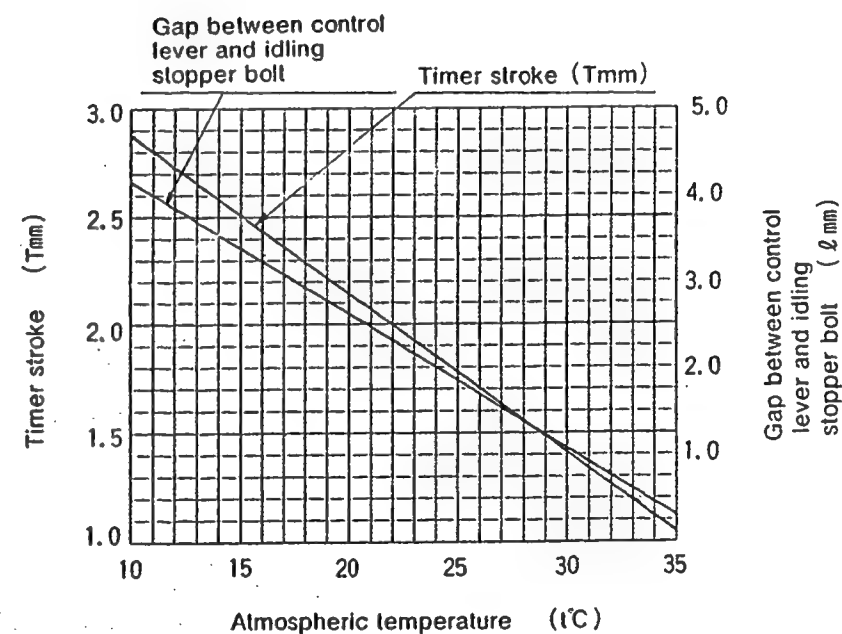


Fig. 2



## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : 4D55T

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104640-3140 [NP-VE4/10F2100RNP76]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 042

DKKC No. 104740-3330

Date : 20.Nov.1986 [Q]

Company : MITSUBISHI

No. MD071531

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3330 2/4

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

2. Test Specifications	Solenoid Timer	ON	OFF
2-1 Timing device	N = rpm mm	850 3.1~ 3.5	1,750 8.1~ 9.3
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 95~148	2,100 6.5~ 7.1
2-4 Fuel injection quantities			
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)
Full speed position	600	32.2~34.2	0
	750	35.7~37.7	100~120
	1,250	49.3~53.3	468~488
	2,100	42.8~47.8	615~635
	2,650	18.1~26.1	615~635
	3,050	Below 10	615~635
Switch OFF	375	0	
Idling position	600	Below 3	
	375	6.4~10.4	
Partial load	600	14.5~26.5	
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V		

## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	0.8~1.0 mm
BCS	4.4~4.6 mm

## Control lever angle

α	55.0~63.0 deg
A	— mm
β	41.0~51.0 deg
B	— mm
γ	11.5~12.5 deg
C	— mm

○ Note

■ RUN the pump at 1750rpm, and switch the solenoid timer ON-OFF five or six times to check that it operates properly.

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

○ Note

■ If there is no designation in the specifications Solenoid Timer ON-OFF position, then the position should be regarded ON.



DIESEL KIKI

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Service Department

3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN

Tel. (03) 400-1551-Fax: (03) 499-4115

## ■ Accelerator Switch Installation Adjustment

1. Insert a block gauge (thickness gauge) of 5.2 mm thickness between the fall speed stopper bolt and control lever.
2. With the control lever in the position described in step 1, adjust the installation position of the accelerator switch, and set it so that it can change from OFF to ON.

## ■ W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment
2. Adjust using time. stroke adjusting screw so that the timer stroke is as calculated in Step 1.

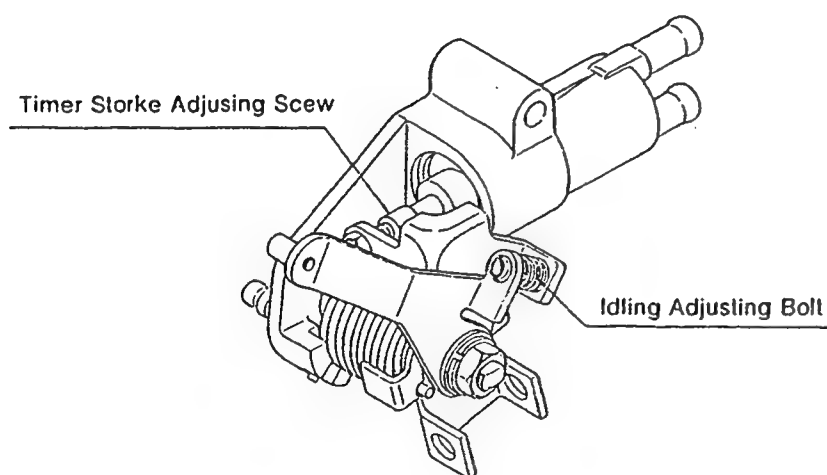


Fig. 1

### 2) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever roller and control lever are in contact.

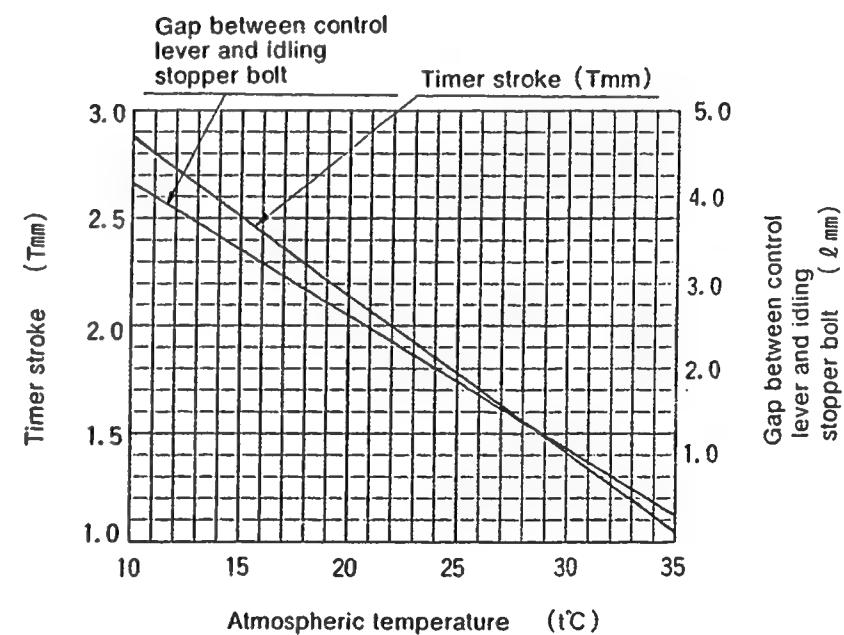


Fig. 2

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : 4D55T

BOSCH No.9 460 610 003

DKKC No. 104740-3360

Date : 20.Nov.1986 0

Company : MITSUBISHI

No. MD 071534

104740-3360

Injection pump No: 104640-3060 [NP-VE4/10F2100RNP149]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	1.1~1.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	32.7~33.7 (cc/1,000st)	0	2.5
Full load delivery with charge air pressure	750	36.2~37.2 (cc/1,000st)	100~120	
1-4 Idle speed regulation	375	6.4~10.4 (cc/1,000st)	0	2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	19.1~25.2 (cc/1,000st)	615~635	6.5
1-7				
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	850 1.1~1.5	1,750 6.1~7.3	2,100 7.8~8.6
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~3.5	1,250 4.5~5.1	2,100 6.5~7.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 58~102		

## **2-4 Fuel injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	32.2~34.2	0	
	750	35.7~37.7	100~120	
	1,250	49.3~53.3	468~488	
	2,100	42.8~47.8	615~635	
	2,650	18.1~26.1	615~635	
	3,050	Below 10	615~635	
Switch OFF	375	0		
Idling position	600	Below 3		
	375	6.4~10.4		
Partial load	600	14.5~26.5		

2-5 Max.cut-in voltage : 8 V  
Solenoid Test voltage : 12~14 V

## **3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.8~1.0	mm
BCS	4.4~4.6	mm

## **Control lever angle**

α	55.0~63.0	deg
A		mm
β	41.0~51.0	deg
B		mm
γ	11.5~12.5	deg
C		mm

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm), set the boost pressure at 100~120 mmHg or — kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

## INJ. PUMP CALIBRATION DATA

## Distributor-type

ENGINE MODEL : 4D55

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-3200 [NP-VE4/10F2100RNP178]

BOSCH No.9 460 610 043

DKKC No. 104740-3410

Date: 20.Nov.1986 ①

Company: MITSUBISHI

No. MD071539

104740-3410

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	1.1~ 1.5 (mm)		
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	750	33.2~36.2 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	6.9~ 9.9 (cc/1,000st)		2.5
1-5 Start	100	66.0~86.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	13.1~19.1 (cc/1,000st)		4.0
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	850 0.9~ 1.7	1,750 6.1~ 7.3	2,100 7.8~ 8.6
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	750	32.7~36.7		
	1,250	36.7~40.7		
	2,100	32.2~36.2		
	2,550	11.1~21.1		
	2,900	Below 5.0		
Switch OFF	375	0		
Idling position	600	Below 3.0		
	375	6.4~10.4		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~16 V			

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.3~1.5	mm
BCS	—	mm

## Control lever angle

α	55.0~63.0	deg
A	—	mm
β	38.0~48.0	deg
B	—	mm
γ	—	deg
C	—	mm

## ■ FICD Mounting Position Adjustment

1. Hold the control lever in the idling position.
2. Position the FICD mounting bracket so that the gap between the control lever and the FICD lever is 1+1 mm.

## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : 4D55

Injection pump No: 104640-3210 [NP-VE4/10F2100RMP169]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 095

DKKC No. 104740-3430

Date : 20.Nov.1986 [0]

Company : MITSUBISHI

No. MD071541

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	850	1.1~ 5.1 (mm)		
1-2 Supply pump pressure	1,250	4.6~ 5.2 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	750	34.0~35.0 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	6.9~10.7 (cc/1,000st)		2.5
1-5 Start	100	68.0~88.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,350	6.8~12.8 (cc/1,000st)		4.0
1-7				
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	850 0.9~ 1.7	1,750 6.3~ 7.5	2,100 7.8~ 8.6
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 3.0~ 3.6	1,250 4.6~ 5.2	2,100 6.6~ 7.2
2-3 Overflow delivery	N = rpm cc/10s	1,250 48~92		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	750	33.5~35.5		
	1,250	37.7~41.7		
	2,100	33.0~37.0		
	2,350	5.0~14.8		
	2,500	Below 5		
Switch OFF	375	0		
Idling position	600	Below 3		
	375	6.6~10.6		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.3~1.5 mm
BCS	— mm

#### Control lever angle

α	55.0~65.0 deg
A	10.5~16.0 mm
β	38.0~48.0 deg
B	11.5~15.5 mm
γ	— deg
C	— mm



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Tel. (03) 400-1551 • Fax: (03) 499-4115

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : 4D55T

BOSCH No.9 460 610 096

DKKC No. 104740-3541

Date : 20.Nov.1986 0

Company : MITSUBISHI

No. MD077643

104740-3541

Injection pump No: 104640-3271 (NP-VE4/10F2100RNP258)

Pump rotation : clockwise-viewed from drive side

For Test Condition see  
Microfiche No.WP-210(N16)

Pre-stroke : — mm

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	35.7~36.7 (cc/1,000st)	0	3.0
Full load delivery with charge air pressure	750	42.8~43.8 (cc/1,000st)	170~190	
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)	0	2.0
1-5 Start	100	63.0~83.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	16.6~22.6 (cc/1,000st)	510~530	5.5
1-7				
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	750 0.5~ 1.7	1,250 2.9~ 3.7	1,750 4.9~6.1	2,100 6.6~ 7.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0			

## **2-4 Fuel injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	35.2~37.2	0	
	750	42.3~44.3	170~190	
	1,250	53.8~58.8	510~530	
	2,100	48.3~53.3	510~530	
	2,650	14.6~24.6	510~530	
	3,050	Below 5	510~530	
Switch OFF	375	0	0	
Idling position	600	Below 3	0	
	375	6.0~10.0	0	

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.3~1.5 mm
BCS	4.3~4.5 mm

## **Control lever angle**

α	55.0~63.0 deg
A	10.5~16.0 mm
β	36.0~46.0 deg
B	10.5~15 mm
γ	— deg
C	— mm

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 180 mmHg or 0.25 kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.

## INJ. PUMP CALIBRATION DATA

### Distributor-type

ENGINE MODEL : 4D55T

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-3271 [NP-VE4/10F2100RNP258]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No. 9 460 610 046

DKKC No. 104740-3570

Date : 20 Nov. 1986

Company : MITSUBISHI

No. MD077642

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3570

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.1~ 3.5 (mm)	0	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	0	
1-3 Full load delivery without charge air pressure	600	35.7~36.7 (cc/1,000st)	0	3.0
Full load delivery with charge air pressure	750	42.8~43.8 (cc/1,000st)	170~190	
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)	0	2.0
1-5 Start	100	63.0~83.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	16.6~22.6 (cc/1,000st)	510~530	5.5
1-7				
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm	750	1,250	1,750	2,100
	mm	0.5~ 1.7	2.9~ 3.7	4.9~6.1	6.6~ 7.4
2-2 Supply pump	N = rpm	600	1,250	2,100	
	kg/cm <sup>2</sup>	2.9~ 3.5	4.5~ 5.1	6.5~ 7.1	
2-3 Overflow delivery	N = rpm	1,250			
	cc/10s	48.0~92.0			

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	600	35.2~37.2	0	
	750	42.3~44.3	70~190	
	1,250	53.8~58.8	510~530	
	2,100	48.3~53.3	510~530	
	2,650	14.6~24.6	510~530	
	3,050	Below 5	510~530	
Switch OFF	375	0	0	
Idling position	600	Below 3	0	
	375	6.0~10.0	0	

### 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.3~1.5	mm
BCS	4.3~4.5	mm

### Control lever angle

α	55.0~63.0	deg
A	10.5~16.0	mm
β	36.0~46.0	deg
B	10.5~15	mm
γ	—	deg
C	—	mm

2-5 Max.cut-in voltage : 8 V  
Solenoid Test voltage : 12~14 V

○ Note

■ After adjustment of full load fuel injection quantity (600 rpm) , set the boost pressure at 180 mmHg or 0.25 kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ Check that the injection quantity is within the specified range even when the boost pressure exceeds 700 mmHg.



# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : 4D56

BOSCH No.9 460 610 187

DKKC No. 104740-3610

Date : 20.Nov.1986 (0)

Company : MITSUBISHI

No. MD103210

104740-3610 2/3

Injection pump No: 104640-3330 [NP-VE4/10F2100RNP433]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=3.5~ 3.9 (mm)		
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	45.3~46.3 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)		2.0
1-5 Start	100	63.0~83.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	15.1~21.1 (cc/1,000st)		4.0
1-7 Load-timer Adjustment	1,250	T-0.6±0.2mm		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	500 0.6~ 1.8	750 1.4~ 2.6	1,250 3.3~ 4.1	2,100 6.6~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0			
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	1,250	44.8~46.8			
	600	42.3~46.3			
	2,100	37.2~41.2			
	2,550	13.1~23.1			
	2900	Below 5.0			
Switch OFF	375	0			
Idling position	600 375	Below 3.0 6.0~10.0			
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V				

## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.1~1.3 mm
BCS	— mm
Control lever angle	
α	55.0~63.0 deg
A	10.5~16.0 mm
β	41.0~51.0 deg
B	12.5~16.5 mm
γ	— deg
C	— mm

## **LOAD TIMER ADJUSTMENT**

### **1) Adjustment**

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1250 rpm

Fuel Injection : 35.7±0.5 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

### **2) Confirmation of Timer Characteristics**

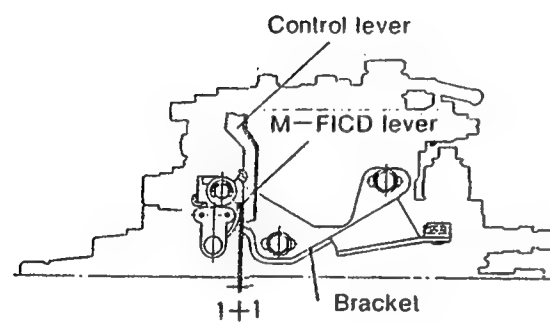
Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	34.7~36.7	—	(3.1)	0.2~1.0
1250	26.7~29.7	—	(2.3)	0.8~2.0

104740-3610 3/3

**■ FICD Mounting Position Adjustment**

1. Hold the control lever in the idling position.
2. Position the FICD mounting bracket so that the gap between the control lever and the FICD lever is  $1 \pm 1$  mm.



# **INJ. PUMP CALIBRATION DATA**

## **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR : 4D56

Injection pump No: 104640-3340 [NP-VE4/10F2100RNP432]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 450 610 210

DKKC No. 104740-3620

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD103205

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3620

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=3.5~ 3.9 (mm)		
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	45.3~46.3 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)		2.0
1-5 Start	100	63.0~83.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	15.1~21.1 (cc/1,000st)		4.0
1-7 Load-timer Adjustment	1,250	T-0.6±0.2mm		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	500 0.6~ 1.8	750 1.4~ 2.6	1,250 3.3~ 4.1	2,100 6.6~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0			

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	44.8~46.8		
	600	42.3~46.3		
	2,100	37.2~41.2		
	2,550	13.1~23.1		
	2900	Below 5.0		
Switch OFF	375	0		
Idling position	600	Below 3.0		
	375	6.0~10.0		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.1~1.3 mm
BCS	— mm

## **Control lever angle**

α	55.0~63.0° deg
A	10.5~16.0 mm
β	41.0~51.0° deg
B	12.5~16.5 mm
γ	— deg
C	— mm

## **LOAD TIMER ADJUSTMENT**

### **1) Adjustment**

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1250 rpm

Fuel Injection : 35.7±0.5 cc/1000st  
Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

### **2) Confirmation of Timer Characteristics**

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	34.7~36.7	—	(3.1)	0.2~1.0
1250	26.7~29.7	—	(2.3)	0.8~2.0

## INJ. PUMP CALIBRATION DATA

TEST OIL:  
ISO 4113 or  
SAE J967d

**Distributor-type**

MOTOR : 4D56

Injection pump No: 104640-3340 [NP-VE4/10F2100RNP432]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 211

DKKC No. 104740-3630

Date : 20.Nov.1986 ①

Company : MITSUBISHI

No. MD103206

For Test Condition see  
Microfiche No.WP-210(N16)

104740-3630

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=3.5~ 3.9 (mm)		
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	45.3~46.3 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)		2.0
1-5 Start	100	63.0~83.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	15.1~21.1 (cc/1,000st)		4.0
1-7 Load-timer Adjustment	1,250	T-0.6±0.2 (mm)		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm	500	750	1,250	2,100
	mm	0.6~ 1.8	1.4~ 2.6	3.3~ 4.1	6.6~ 7.8
2-2 Supply pump	N = rpm	600	1,250	2,100	
	kg/cm <sup>2</sup>	2.9~ 3.5	4.5~ 5.1	6.5~ 7.1	
2-3 Overflow delivery	N = rpm	1,250			
	cc/10s	48.0~92.0			
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	1,250	44.8~46.8			
	600	42.3~46.3			
	2,100	37.2~41.2			
	2,550	13.1~23.1			
	2900	Below 5.0			
Switch OFF	375	0			
Idling position	600	Below 3.0			
	375	6.0~10.0			
2-5 Solenoid	Max.cut-in voltage : 8 V				
	Test voltage : 12~14 V				

### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.1~1.3 mm
BCS	— mm
Control lever angle	
α	55.0~63.0° deg
A	10.5~16.0 mm
β	41.0~51.0° deg
B	12.5~16.5 mm
γ	— deg
C	— mm

### LOAD TIMER ADJUSTMENT

#### 1) Adjustment

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg  
Pump Speed : 1250 rpm  
Fuel Injection : 35.7±0.5 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

#### 2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	34.7~36.7	—	(3.1)	0.2~1.0
1250	26.7~29.7	—	(2.3)	0.8~2.0

**INJ. PUMP CALIBRATION DATA****Distributor-type**

TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : 4D56T

Injection pump No: 104640-3350 [NP-VE4/10F2100RNP430]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 205

DKKC No. 104740-3640

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD103207

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=3.5~3.9 (mm)	540~560	4.5
1-2 Supply pump pressure	1,250	4.5~5.1 (kg/cm <sup>2</sup> )	540~560	
1-3 Full load delivery without charge air pressure	1,250	61.4~62.4 (cc/1,000st)	540~560	
Full load delivery with charge air pressure	750	60.4~61.4 (cc/1,000st)	320~340	2.0
1-4 Idle speed regulation	375	6.5~9.5 (cc/1,000st)		
1-5 Start	100	63.0~83.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,650	22.2~28.2 (cc/1,000st)	540~560	5.5
1-7 Load-timer Adjustment	1,250	T=0.6±0.2mm	540~560	
1-8				

**2. Test Specifications**

2-1 Timing device	N = rpm mm	500 0.6~ 1.8	750 1.4~ 2.6	1,250 3.3~ 4.1	2,100 6.6~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0			
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	1,250	60.9~62.9	540~560		
	600	45.8~50.8	0		
	750	59.9~61.9	320~340		
	2,100	52.8~57.8	540~560		
	2,650	20.2~30.2	540~560		
	3050	Below 5.0	540~560		
Switch OFF	375	0	0		
Idling position	600	Below 3.0	0		
	375	6.0~10.0	0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V				

3. Dimensions		
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.9~1.1	mm
BCS	3.6~3.8	mm
Control lever angle		
α	55.0~63.0	deg
A	10.5~16.0	mm
β	40.0~50.0	deg
B	12.1~16.1	mm
γ	—	deg
C	—	mm

**3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.9~1.1	mm
BCS	3.6~3.8	mm

**Control lever angle**

α	55.0~63.0	deg
A	10.5~16.0	mm
β	40.0~50.0	deg
B	12.1~16.1	mm
Y	—	deg
C	—	mm

○ Note

■ After adjustment of full load fuel injection quantity ( 1250 rpm ), set the boost pressure at 330 mm Hg or 0.45 kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ To adjust the timer stroke, supply boost pressure of 550 mmHg ( 0.75 kg/cm<sup>2</sup> ), move the control lever to a position where the full-load injection quantity can be obtained, and then adjust the timer stroke.

■ **LOAD TIMER ADJUSTMENT**

1) Adjustment

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : 540~560 mmHg

Pump Speed : 1250 rpm

Fuel Injection :  $50.3 \pm 0.5$  cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	49.3~51.3	540~560	(3.1)	0.2~1.0
1250	38.7~41.7	540~560	(2.3)	0.8~2.0

## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : 4D56T

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-3350 [NP-VE4/10F2100RNP430]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 206

DKKC No. 104740-3650

Date : 20.Nov.1986 ⑩

Company : MITSUBISHI

No. MD103208

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=3.5~ 3.9 (mm)	540~560	4.5
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	540~560	
1-3 Full load delivery without charge air pressure	1,250	61.4~62.4 (cc/1,000st)	540~560	
Full load delivery with charge air pressure	750	60.4~61.4 (cc/1,000st)	320~340	2.0
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)		
1-5 Start	100	63.0~83.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,650	22.2~28.2 (cc/1,000st)	540~560	5.5
1-7 Load-timer Adjustment	1,250	T=0.6±0.2 (mm)		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	500 0.6~ 1.8	750 1.4~ 2.6	1,250 3.3~ 4.1	2,100 6.6~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0			

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	60.9~62.9	540~560	
	600	45.8~50.8	0	
	750	59.9~61.9	320~340	
	2,100	52.8~57.8	540~560	
	2,650	20.2~30.2	540~560	
	3,050	Below 5.0	540~560	
Switch OFF	375	0		
Idling position	600	Below 3.0	0	
	375	6.0~10.0	0	

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	0.9~1.1 mm
BCS	3.6~3.8 mm

## Control lever angle

α	55.0~63.0 deg
A	10.5~16.0 mm
β	40.0~50.0 deg
B	12.1~16.1 mm
γ	— deg
C	— mm

○ Note

■ After adjustment of full load fuel injection quantity ( 1250 rpm ), set the boost pressure at 330 mm Hg or 0.45 kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ To adjust the timer stroke, supply boost pressure of 550 mmHg ( 0.75 kg/cm<sup>2</sup> ), move the control lever to a position where the full-load injection quantity can be obtained, and then adjust the timer stroke.



■ **LOAD TIMER ADJUSTMENT**

1) Adjustment

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : 540~560 mmHg

Pump Speed : 1250 rpm

Fuel Injection :  $50.3 \pm 0.5$  cc/1000st  
Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	49.3~51.3	540~560	(3.1)	0.2~1.0
1250	38.7~41.7	540~560	(2.3)	0.8~2.0

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR : 4D56T

Injection pump No: 104640-3360 [NP-VE4/10F2100RNP431]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 207

DKKC No. 104740-3660

Date : 20.Nov.1986

Company : MITSUBISHI

No. MD103209

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=3.5~ 3.9 (mm)	540~560	
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )	540~560	
1-3 Full load delivery without charge air pressure	1,250	61.4~62.4 (cc/1,000st)	540~560	4.5
Full load delivery with charge air pressure	750	60.4~61.4 (cc/1,000st)	320~340	
1-4 Idle speed regulation	375	6.5~ 9.5 (cc/1,000st)	0	2.0
1-5 Start	100	63.0~83.0 (cc/1,000st)	0	
1-6 Full-load speed regulation	2,650	22.2~28.2 (cc/1,000st)	540~560	5.5
1-7 Load-timer Adjustment	1,250	T=0.6±0.2mm	540~560	
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	500 0.6~ 1.8	750 1.4~ 2.6	1,250 3.3~ 4.1	2,100 6.6~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,100 6.5~ 7.1	
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0			
2-4 Fuel injection quantities					
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)	
Full speed position	1,250	60.9~62.9	540~560		
	600	45.8~50.8	0		
	750	59.9~61.9	320~340		
	2,100	52.8~57.8	540~560		
	2,650	20.2~30.2	540~560		
	3050	Below 5.0	540~560		
Switch OFF	375	0	0		
Idling position	600	Below 3.0	0		
	375	6.0~10.0	0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V				

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	0.9~1.1	mm
BCS	3.6~3.8	mm
Control lever angle		
α	55.0~63.0	deg
A	10.5~16.0	mm
β	40.0~50.0	deg
B	12.1~16.1	mm
γ	—	deg
C	—	mm

○ Note

■ After adjustment of full load fuel injection quantity ( 1250 rpm ) , set the boost pressure at 330 mmHg or 0.45 kg/cm<sup>2</sup>, and at pump speed of 750 rpm adjust the fuel injection quantity using the BCS spring set screw.

○ Note

■ To adjust the timer stroke,supply boost pressure of 550 mmHg ( 0.75 kg/cm<sup>2</sup> ) , move the control lever to a position where the full-load injection quantity can be obtained, and then adjust the timer stroke.

## LOAD TIMER ADJUSTMENT

### 1) Adjustment

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : 540~560 mmHg

Pump Speed : 1250 rpm

Fuel Injection :  $50.3 \pm 0.5$  cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

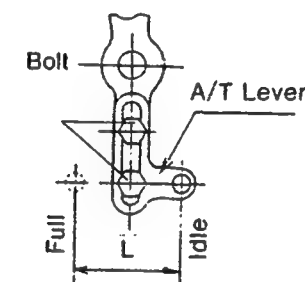
### 2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	49.3~51.3	540~560	(3.1)	0.2~1.0
1250	38.7~41.7	540~560	(2.3)	0.8~2.0

## A/T LINK LEVER ADJUSTMENT

- ① Move the control lever from the idling position to the full speed position and confirm that the A/T lever stroke (L) is  $32.9 \pm 1$  mm.
- ② If dimension L is not as specified, loosen the bolt and adjust by altering the A/T lever position.
- ③ After adjustment, securely tighten the bolt.



## INJ. PUMP CALIBRATION DATA

### Distributor-type

MOTOR : SD23

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104640-4311 [NP-VE4/10F2150RNP157]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 163

DKKC No. 104740-4311

Date : 20.Nov.1986 [0]

Company : NISSAN

No. 16700 R8302

For Test Condition see  
Microfiche No.WP-210(N16)

104740-4311

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,700	4.5~ 4.9 (mm)		
1-2 Supply pump pressure	1,700	5.6~ 6.2 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,000	35.6~36.6 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	300	4.3~ 8.3 (cc/1,000st)		2.0
1-5 Start	100	55.0~90.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,300	14.7~20.7 (cc/1,000st)		
1-7 ACS Adjustment	1,000	5.0~ 6.0 (cc/1,000st)	-164±5	
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm	1,000	1,700	2,150
	mm	1.4~ 2.6	4.4~ 5.0	6.1~ 7.1
2-2 Supply pump	N = rpm	600	1,700	2,150
	kg/cm <sup>2</sup>	3.0~ 3.6	5.6~ 6.2	6.8~ 7.4
2-3 Overflow delivery	N = rpm	1,000		
	cc/10s	41.0~85.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,000	35.1~37.1		
	600	29.3~33.3		
	1,000	Decrease4.5~6.5	-164±5	
	2,150	30.5~34.7		
	2,300	14.2~21.2		
	2,450	Below 5		
Switch OFF	300	0		
Idling position	300	4.3~ 8.3		
	350	Below 3		

### 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.4~1.6	mm
BCS	—	mm

### Control lever angle

α	21.0~29.0	deg
A	4.0~ 9.2	mm
β	41.0~51.0	deg
B	12.1~16.1	mm
γ	—	deg
C	—	mm

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

### ■ FULL-LOAD FUEL INJECTION QUANTITY AND ACS ADJUSTING PROCEDURE AT ALTITUDE

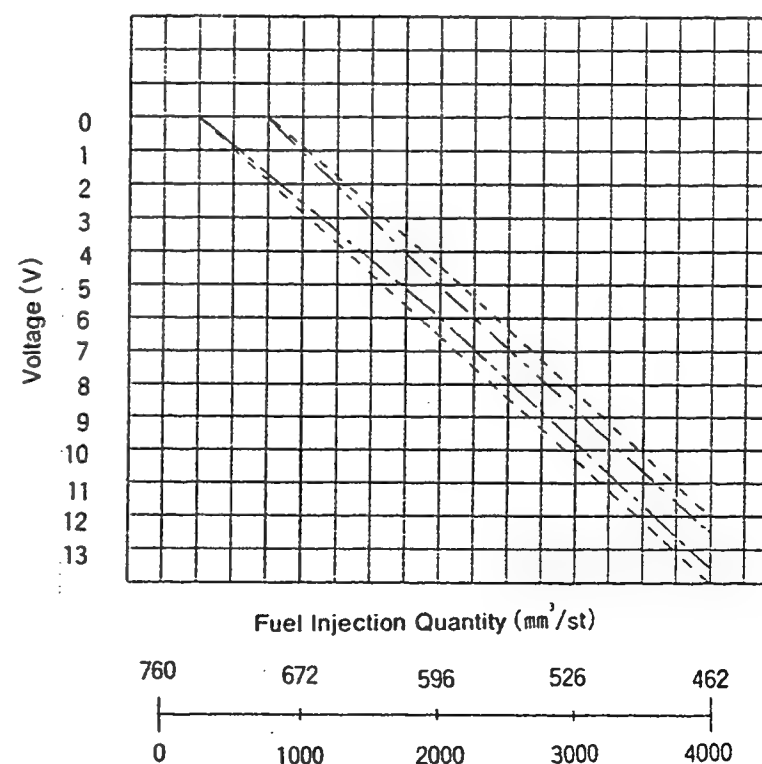
#### 1) FULL-LOAD FUEL INJECTION QUANTITY ADJUSTMENT

- Remove the ACS cover, bellow and adjusting shims.
- Perform all adjustments as described in the adjusting specifications, except for ACS adjustment.

#### 2) ACS ADJUSTMENT

- Attach the ACS cover, bellows and adjusting shims.
- At pump speed of 1000 rpm and referring to the graph below, use the shims to adjust the fuel injection quantity decrease quantity according to altitude.

==== Adjustment limit  
----- Inspection limit



## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : S2

Injection pump No: 104648-0050 (NP-VE4/8F2125LNP138)

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 171

DKKC No. 104748-0050

Date : 20.Nov.1986 0

Company : MAZDA

No. S201 13 800B

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	4.0~ 4.4 (mm)		
1-2 Supply pump pressure	1,250	4.4~ 5.0 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	38.5~39.5 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	325	5.2~ 9.2 (cc/1,000st)		2.0
1-5 Start	100	Above 42 (cc/1,000st)		
1-6 Full-load speed regulation	2,400	13.1~17.1 (cc/1,000st)		
1-7				
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,250 3.9~ 4.5	2,125 8.5~ 9.7	
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	500 2.1~ 2.7	1,250 4.4~ 5.0	2,125 6.9~ 7.5
2-3 Overflow delivery	N = rpm cc/10s	1,250 52.0~95.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	38.0~40.0		
	500	32.6~36.6		
	2,125	34.1~39.1		
	2,400	12.1~18.1		
	2,500	Below 10		
Switch OFF	325	0		
Idling position	325 Below 470	5.2~ 9.2 0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

3. Dimensions		
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm
Control lever angle		
α	29.0~37.0	deg
A	8.1~15.2	mm
β	45.0~55.0	deg
B	12.8~16.8	mm
γ	—	deg
C	—	mm

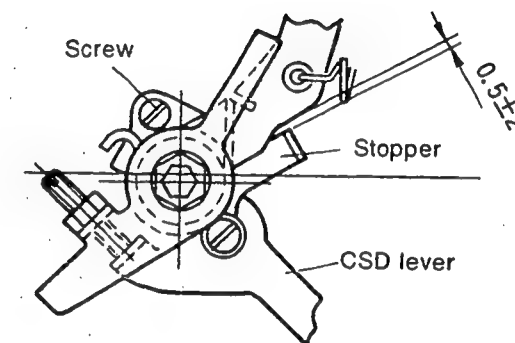
### 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm
Control lever angle		
α	29.0~37.0	deg
A	8.1~15.2	mm
β	45.0~55.0	deg
B	12.8~16.8	mm
γ	—	deg
C	—	mm

### ■ M-CSD Assembly and Adjustment

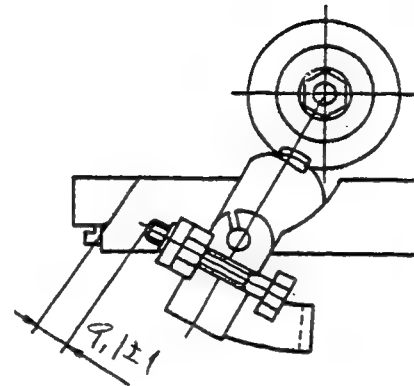
#### 1) Fixing the M-CSD stopper

1. Fix the M-CSD assembly temporarily to the pump housing.
2. Turn the drive shaft at least two turns in the direction of pump rotation.
3. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
4. Move the CSD lever to the advance side.
5. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
6. Adjust the stopper position so that the gap between the CSD lever and the stopper is 0.5±2 mm.
7. After adjustment, tighten the M-CSD screw to the specified torque (T).



## 2) FICD screw adjustment

1. Move the CSD lever so that it contacts the stopper.
2. Insert a block gauge (thickness gauge) of  $9.1 \pm 1$  mm thickness between the control lever and idling stopper bolt. (to position the control lever  $10^\circ$  from the idling position).
3. Adjust the FICD screw so that the control lever and the FICD screw are in contact.



# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

MOTOR : R2

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104648-0151 [NP-VE4/8F2125RNP207]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 054

DKKC No. 104748-0151

Date : 20.Nov.1986

Company : MAZDA

No. R201 13 800B

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.7~ 4.1 (mm)		
1-2 Supply pump pressure	1,250	4.9~ 5.5 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	38.2~39.2 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	6.0~10.0 (cc/1,000st)		2.0
1-5 Start	100	Above 42 (cc/1,000st)		
1-6 Full-load speed regulation	2,400	11.1~15.1 (cc/1,000st)		
1-7 Load-timer Adjustment	1,250	3.1±0.2 (mm)		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	1,250 3.6~ 4.2	1,500 4.6~ 5.8	2,125 8.2~ 9.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	500 2.7~ 3.3	1,250 4.9~ 5.5	2,125 7.3~ 7.9
2-3 Overflow delivery	N = rpm cc/10s	1,250 49.7~93.7		

## **2-4 Fuel injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	37.7~39.7		
	500	31.4~35.4		
	1,500	37.6~41.6		
	2,125	31.9~35.9		
	2,300	20.0~26.0		
	2,400	10.1~16.1		
	2,500	Below 3.0		

Switch OFF	350	0		
Idling position	350	6.0~10.0		

2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V
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## **3. Dimensions**

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.4~1.6 mm
BCS	— mm

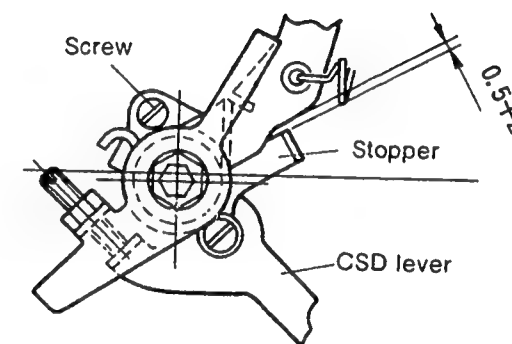
## **Control lever angle**

α	26.0~34.0 deg
A	4.0~ 9.5 mm
β	40.0~50.0 deg
B	12.5~15.8 mm
γ	— deg
C	— mm

## **M-CSD Assembly and Adjustment**

### **1) Fixing the M-CSD stopper**

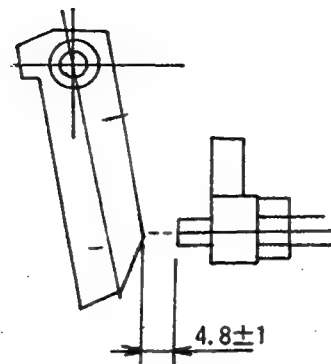
1. Fix the M-CSD assembly temporarily to the pump housing.
2. Turn the drive shaft at least two turns in the direction of pump rotation.
3. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
4. Move the CSD lever to the advance side.
5. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
6. Adjust the stopper position so that the gap between the CSD lever and the stopper is 0.5±2 mm.
7. After adjustment, tighten the M-CSD screw to the specified torque (T).





## 2) FICD screw adjustment

1. Move the CSD lever so that it contacts the stopper.
2. Insert a block gauge (thickness gauge) of  $4.8 \pm 0.1$  mm thickness between the control lever and idling stopper bolt.  
(to position the control lever "I" from the idling position).
3. Adjust the FICD screw so that the control lever and the FICD screw are in contact.



**INJ. PUMP CALIBRATION DATA****Distributor-type**

MOTOR : R2

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104648-0161 [NP-VE4/8F2125RNP208]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 055

DKKC No. 104748-0161

Date : 20.Nov.1986 ①

Company : MAZDA

No. R20213800B

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.7~4.1 (mm)		
1-2 Supply pump pressure	1,250	4.9~5.5 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	38.2~39.2 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	6.0~10.0 (cc/1,000st)		2.0
1-5 Start	100	Above 42 (cc/1,000st)		
1-6 Full-load speed regulation	2,400	11.1~15.1 (cc/1,000st)		
1-7 Load-timer Adjustment	1,250	3.1±0.2 (mm)		
1-8				

**2. Test Specifications**

2-1 Timing device	N = rpm mm	1,250 3.6~4.2	1,500 4.6~5.8	2,125 8.2~9.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	500 2.7~3.3	1,250 4.9~5.5	2,125 7.3~7.9
2-3 Overflow delivery	N = rpm cc/10s	1,250 49.7~93.7		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	37.7~39.7		
	500	31.4~35.4		
	1,500	37.6~41.6		
	2,125	31.9~35.9		
	2,300	20.0~26.0		
	2,400	10.1~16.1		
	2,500	Below 3		
Switch OFF	350	0		
Idling position	350	6.0~10.0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

**3. Dimensions**

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.4~1.6	mm
BCS	—	mm

**Control lever angle**

α	26.0~34.0	deg
A	4.0~9.5	mm
β	40.0~50.0	deg
B	12.5~15.8	mm
γ	—	deg
C	—	mm

**LOAD TIMER ADJUSTMENT****1) Adjustment**

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1250 rpm

Fuel Injection : 28.2±1 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values (page 1/5)

**2) Confirmation of Timer Characteristics**

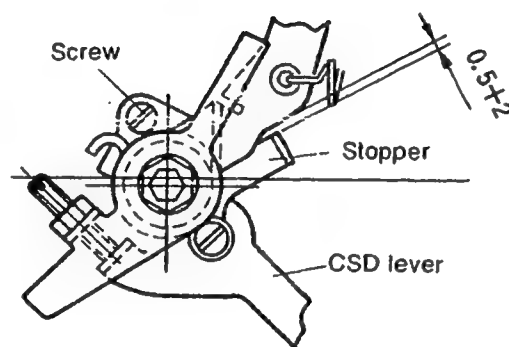
Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	28±1.5	—	3.1±0.3	—
1250	18±1.5	—	(1.9±0.7)	—

■ M-CSD Assembly and Adjustment

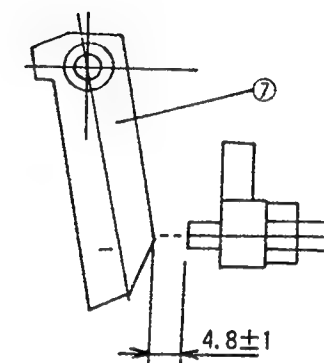
1) Fixing the M-CSD stopper

1. Fix the M-CSD assembly temporarily to the pump housing.
2. Turn the drive shaft at least two turns in the direction of pump rotation.
3. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
4. Move the CSD lever to the advance side.
5. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
6. Adjust the stopper position so that the gap between the CSD lever and the stopper is  $0.5 \pm 2$  mm.
7. After adjustment, tighten the M-CSD screw to the specified torque (T).



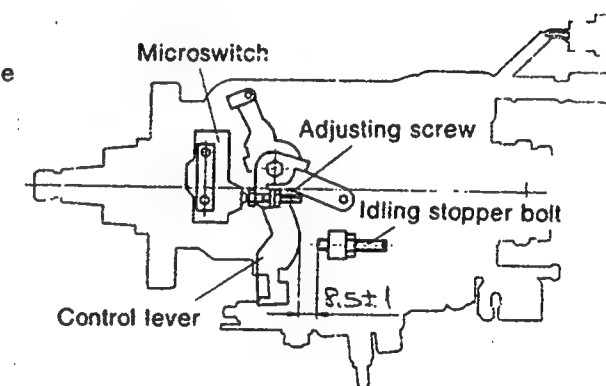
2) FICD screw adjustment

1. Move the CSD lever so that it contacts the stopper.
2. Insert a block gauge (thickness gauge) of  $4.8 \pm 0.1$  mm thickness between the control lever and idling stopper bolt. (to position the control lever 7° from the idling position).
3. Adjust the FICD screw so that the control lever and the FICD screw are in contact.



■ Microswitch Adjustment

1. Fix the control lever in a position where the gap between the control lever and idling stopper bolt is  $8.5 \pm 1$  mm (control lever angle:  $12.5^\circ$ ).
2. Adjust using the adjusting screw so that the microswitch comes ON.

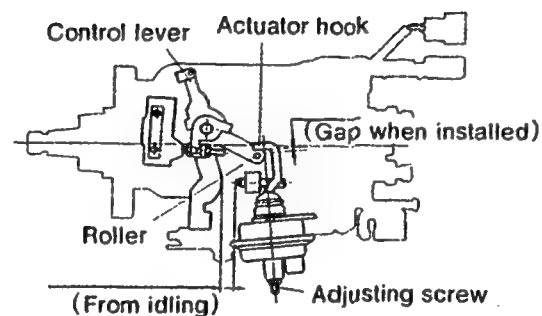


104748-0161 5/5

■ V-FICD Adjustment

1) V-FICD installation position adjustment

1. Hold the control lever in the idling position.
2. Adjust the position of the actuator mounting bracket so that the gap between the control lever roller and the actuator hook is  $2^{+2}_{-1}$  mm.



2) V-FICD stroke adjustment

1. Move the V-FICD through its full stroke.
2. Adjust using the adjusting screw so that the gap between the control lever and the idling stopper bolt is  $3.4 \pm 1$  mm (control lever angle:  $5^\circ$ ).

# INJ. PUMP CALIBRATION DATA

## Distributor-type

TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR : P322(R2)

Injection pump No: 104648-0163 [NP-VE4/8F2125RNP208]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 191

DKKC No. 104748-0163

Date : 20.Nov.1986

Company : MAZDA

No. R20213800D

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	3.3~ 3.7 (mm)		
1-2 Supply pump pressure	1,250	4.9~ 5.5 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	38.2~39.2 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	6.0~10.0 (cc/1,000st)		2.0
1-5 Start	100	Above 42.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,400	11.1~15.1 (cc/1,000st)		
1-7 Load-timer Adjustment	1,250	2.7±0.2mm		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm	1,250	1,500	2,125
	mm	3.2~ 3.8	4.1~ 5.3	7.0~ 8.2
2-2 Supply pump	N = rpm	500	1,250	1,500
	kg/cm <sup>2</sup>	2.7~ 3.3	4.9~ 5.5	5.6~ 6.2
2-3 Overflow delivery	N = rpm	1,250		2,125
	cc/10s	49.7~93.7		7.3~ 7.9

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	37.7~39.7		
	500	30.7~34.7		
	2,125	32.0~36.0		
	2,400	10.1~16.1		
	2,550	Below 4.0		
Switch OFF	350	0		
Idling position	350	6.0~10.0		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.4~1.6 mm
BCS	— mm

## Control lever angle

α	28.0~32.0 deg
A	5.4~ 8.2 mm
β	40.0~50.0 deg
B	12.5~15.8 mm
γ	— deg
C	— mm

## LOAD TIMER ADJUSTMENT

### 1) Adjustment

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg  
Pump Speed : 1250 rpm  
Fuel Injection : 28.2±1 cc/1000st  
Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

### 2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

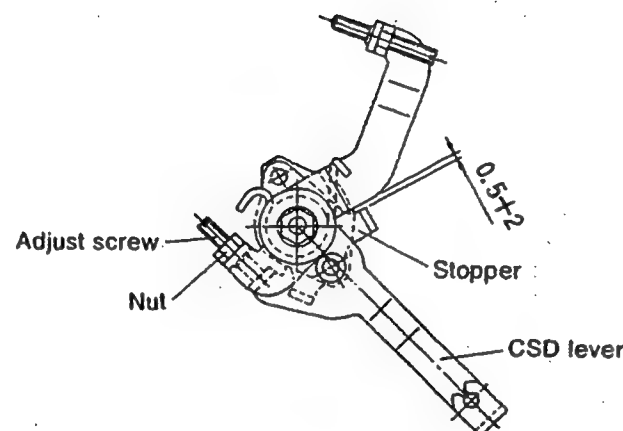
Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	28.2±1.5	—	2.7±0.3	—
1250	18.1±1.5	—	1.5±0.7	—

■ M-CSD Assembly and Adjustment

1) Fixing the M-CSD stopper

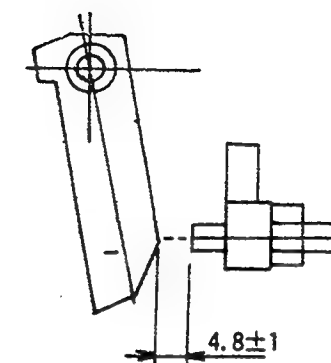
1. Fix the M-CSD assembly temporarily to the pump housing.
2. Turn the drive shaft at least two turns in the direction of pump rotation.
3. Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc).
4. Move the CSD lever to the advance side.
5. Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0").
6. Adjust the stopper position so that the gap between the CSD lever and the stopper is  $0.5 \pm 2$  mm.
7. After adjustment, tighten the M-CSD screw to the specified torque (T).

$$T = 0.6 \sim 0.9 \text{ kg} \cdot \text{m}$$



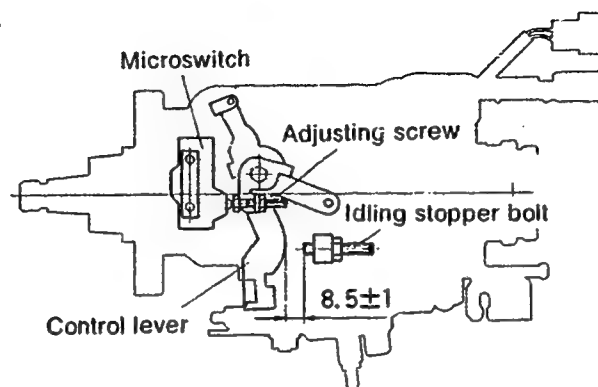
2) FICD screw adjustment

1. Move the CSD lever so that it contacts the stopper.
2. Insert a block gauge (thickness gauge) of  $4.8 \pm 1$  mm thickness between the control lever and idling stopper bolt. (to position the control lever 7° from the idling position).
3. Adjust the FICD screw so that the control lever and the FICD screw are in contact.



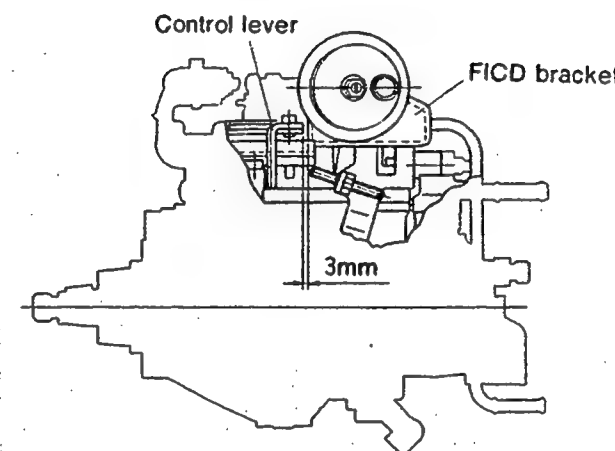
# ■ Microswitch Adjustment

1. Fix the control lever in a position where the gap between the control lever and idling stopper bolt is  $8.5 \pm 1$  mm  
(control lever angle :  $12.5^\circ$  )
2. Adjust using the adjusting screw so that the microswitch comes ON .



# ■ FICD Mounting Position Adjustment

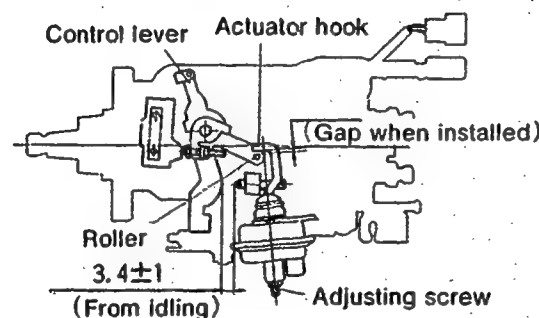
1. Adjust the position of the bracket so that the gap between the control lever and the FICD bracket exceeds 3 mm.



# ■ V-FICD Adjustment

## 1) V-FICD installation position adjustment

1. Hold the control lever in the idling position.
2. Adjust the position of the actuator mounting bracket so that the gap between the control lever roller and the actuator hook is  $2 \pm 2$  mm.



## 2) V-FICD stroke adjustment

1. Move the V-FICD through its full stroke.
2. Adjust using the adjusting screw so that the gap between the control lever and the idling stopper bolt is  $3.4 \pm 1$  mm  
(control lever angle :  $5^\circ$  ) .



# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

MOTOR : RF

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104648-0174 [NP-VE4/8F2325LNP216]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 173

DKKC No. 104748-0174

Date : 20.Nov.1986

Company : MAZDA

No. RF1113800D

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,375	4.0~4.4 (mm)		
1-2 Supply pump pressure	1,375	4.4~5.0 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,375	35.4~36.4 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	410	7.0~9.0 (cc/1,000st)		2.0
1-5 Start	100	Above 42.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,600	10.8~14.8 (cc/1,000st)		
1-7 Load-timer Adjustment	1,375	3.6±0.2mm		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	1,375 3.9~4.5	1,800 6.1~7.3	2,325 7.2~8.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.2~2.8	1,375 4.4~5.0	2,325 6.9~7.5
2-3 Overflow delivery	N = rpm cc/10s	1,370 46.3~90.3		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,375	34.9~36.9		
	600	29.0~33.0		
	2,325	30.2~34.2		
	2,600	9.8~15.8		
	2,700	Below 6.0		
Switch OFF	410	0		
Idling position	410	6.0~10.0		

2-5 Max.cut-in voltage : 8 V  
Solenoid Test voltage : 12~14 V

## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.4~1.6 mm
BCS	— mm

## Control lever angle

α	16.0~24.0 deg
A	5.7~10.9 mm
β	40.0~50.0 deg
B	12.7~16.0 mm
γ	— deg
C	— mm

## LOAD TIMER ADJUSTMENT

### 1) Adjustment

① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1375 rpm

Fuel Injection : 28.2±1 cc/1000st  
Quantity

② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values

### 2) Confirmation of Timer Characteristics

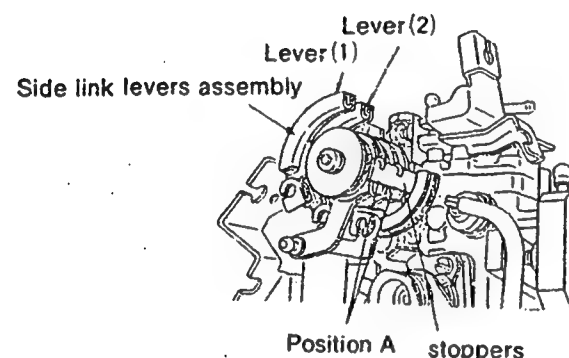
Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1375	28.2±1.5	—	3.6±0.3	—
1375	16.1±1.5	—	2.4±0.7	—

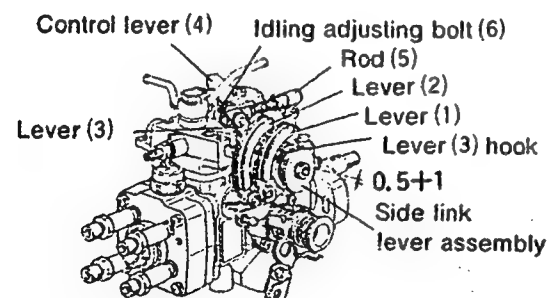
## Side Link Lever Adjustment

### 1) Side link lever adjustment

1. Fix the control lever in the idling position.
2. Check that side link levers (1) and (2) contact the stoppers. (Portion A)

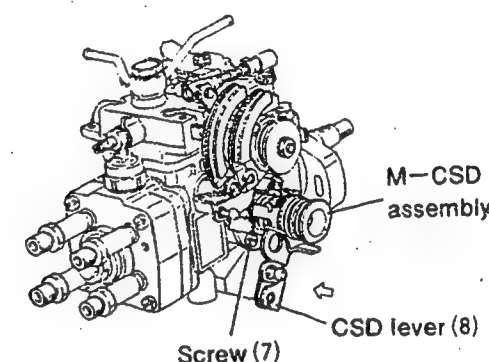


3. If control lever (4) and lever (3) are not connected by rod (5), connect them.
4. After connecting rod (5), adjust the length of rod (5) so that the gap at the hook of lever (3) and levers (1) and (2) is  $0.5 \pm 1$  mm.

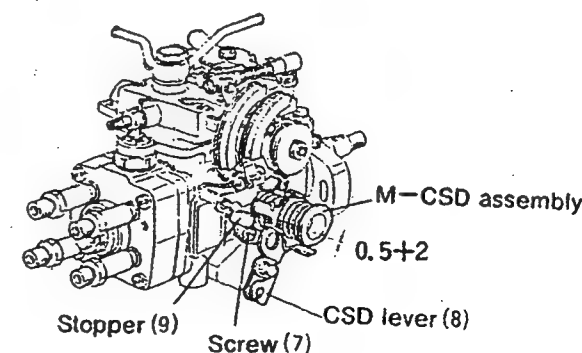


### 2) M-CSD adjustment

1. Loosen M-CSD lock screw (7).
2. Turn the drive shaft two or three turns and set the measuring device at 0.
3. Move the CSD lever gently in the direction of the arrow (advance direction).
4. Fix the CSD lever in a position where the CSD lever shaft ball pin contacts the roller holder. (Move gently, and hold the CSD lever in the position where the resistance changes.)
5. Check that the measuring device is at the 0 point.

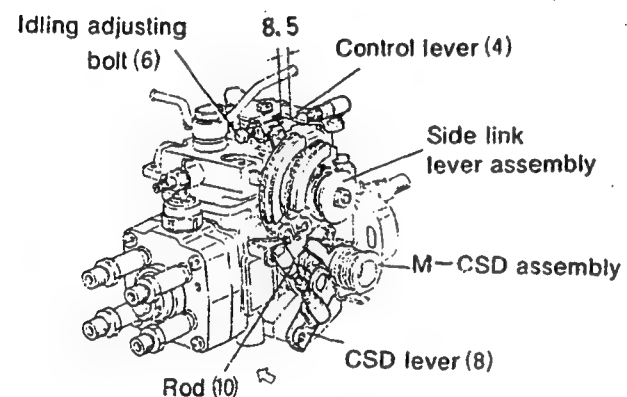


6. Adjust the adjusting screw (12) so that the gap between the CSD lever (8) and the stopper (9) is  $0.5 \pm 2$  mm.
7. Turn the drive shaft two or three turns, check the position of the measuring device 0 point, and then recheck the gap between CSD lever (8) and stopper (9).



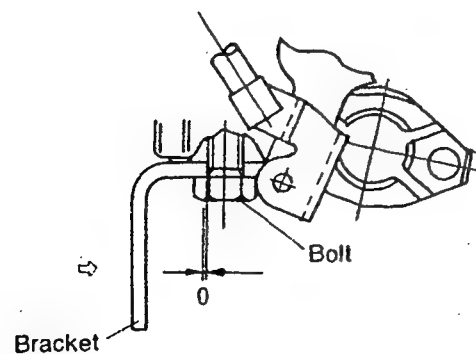
3) Fixing the CSD lever and side link lever connecting rod

1. Connect the side link lever assembly and CSD lever using rod (10).
2. Move the CSD lever through its full stroke (in the direction the arrow).
3. Adjust the length of rod (10) so that the gap between control lever (4) and idling adjusting bolt (6) is  $8.5 \pm 1$  mm, and then fix in this position.



4) Fixing the engine installation bracket

1. Fix the bracket temporarily to the pump.
2. Move the bracket in the direction of the arrow until the clearance is 0.
3. Fix the bracket in position using the bolts.



## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : RF

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104648-0244 [NP-VE4/8F2325LNP351]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 193

DKKC No. 104748-0244

Date : 20.Nov.1986 ①

Company : MAZDA

No. RF39 13 800D

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,375	4.0~ 4.4 (mm)		
1-2 Supply pump pressure	1,375	4.4~ 5.0 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,375	35.4~36.4 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	410	7.0~ 9.0 (cc/1,000st)		2.0
1-5 Start	100	Above 42.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,600	10.8~14.8 (cc/1,000st)		
1-7 Load-timer adjustment	1,375	3.6± 0.2 (mm)		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	1,375 3.9~ 4.5	1,800 6.1~ 7.3	2,325 7.2~ 8.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.2~ 2.8	1,375 4.4~ 5.0	2,325 6.9~ 7.5
2-3 Overflow delivery	N = rpm cc/10s	1,375 46.3~90.3		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,375 600 2,325 2,600 2,700	34.9~36.9 29.0~33.0 30.2~34.2 9.8~15.8 Below 6.0		
Switch OFF	410	0		
Idling position	410	6.0~10.0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.4~1.6 mm
BCS	— mm

## Control lever angle

α	16.0~24.0 deg
A	5.7~ 10.9 mm
β	40.0~50.0 deg
B	12.7~16.0 mm
γ	— deg
C	— mm

## LOAD TIMER ADJUSTMENT

## 1) Adjustment

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1,375 rpm

Fuel Injection : 28.2±1 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values (page 1/5)

## 2) Confirmation of Timer Characteristics

Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

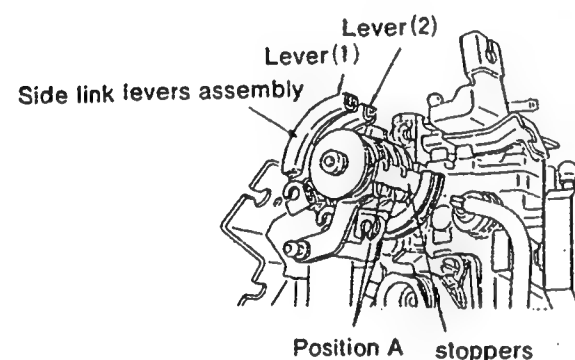
Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1,375	28.2±1.5	—	3.6±0.3	—
1,375	16.1±1.5	—	2.4±0.7	—

104749-0244 3/5

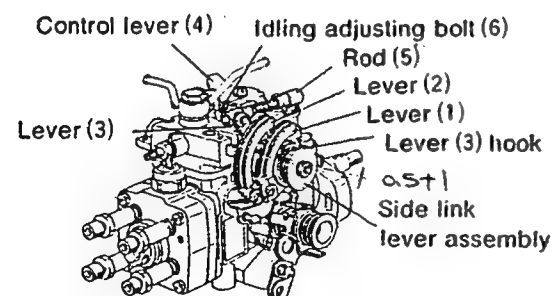
## Side Link Lever Adjustment

### 1) Side link lever adjustment

1. Fix the control lever in the idling position.
2. Check that side link levers (1) and (2) contact the stoppers. (Portion A)

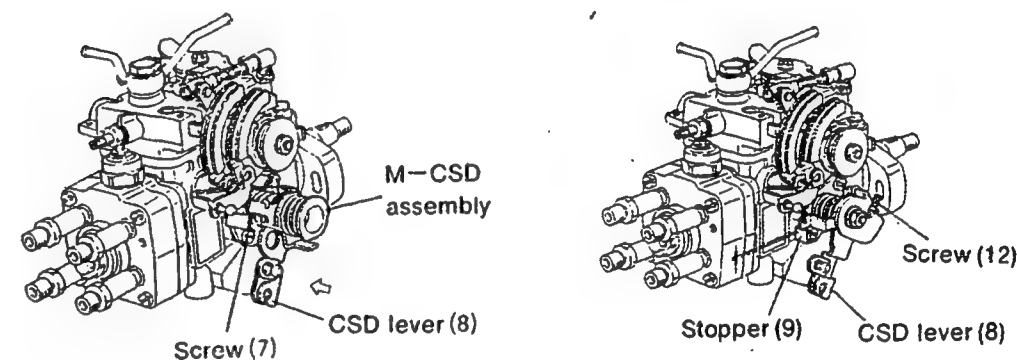


3. If control lever (4) and lever (3) are not connected by rod (5), connect them.
4. After connecting rod (5), adjust the length of rod (5) so that the gap at the hook of lever (3) and levers (1) and (2) is  $0.5 \pm 1$  mm.



### 2) M-CSD adjustment

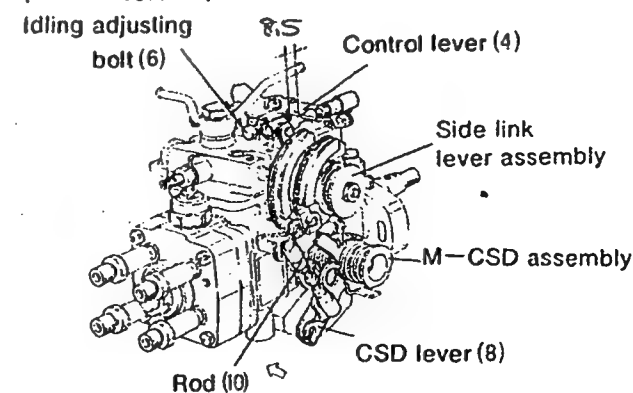
1. Turn the drive shaft two or three turns and set the measuring device at 0.
2. Move the CSD lever gently in the direction of the arrow (advance direction).
3. Fix the CSD lever in a position where the CSD lever shaft ball pin contacts the roller holder. (Move gently, and hold the CSD lever in the position where the resistance changes.)
4. Check that the measuring device is at the 0 point.
5. Adjust the adjusting screw (12) so that the gap between the CSD lever (8) and the stopper (9) is  $0.5 \pm 2$  mm.
6. Turn the drive shaft two or three turns, check the position of the measuring device 0 point, and then recheck the gap between CSD lever (8) and stopper (9).



### 3) Fixing the CSD lever and side link lever connecting rod

1. Connect the side link lever assembly and CSD lever using rod (10).
2. Move the CSD lever through its full stroke (in the direction the arrow).
3. Adjust the length of rod (10) so that the gap between control lever (4) and idling adjusting bolt (6) is 8.5 mm, and then fix in this position.

(Target engine speed: 1900 rpm)



104749-0244 5/5

## INJ. PUMP CALIBRATION DATA Distributor-type

BOSCH No.9 460 610 178

DKKC No. 104748-1190

Date: 20.Nov.1986

Company: ISUZU

No. 894241 5030

For Test Condition see  
Microfiche No.WP-210(N16)

TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : 4FB1

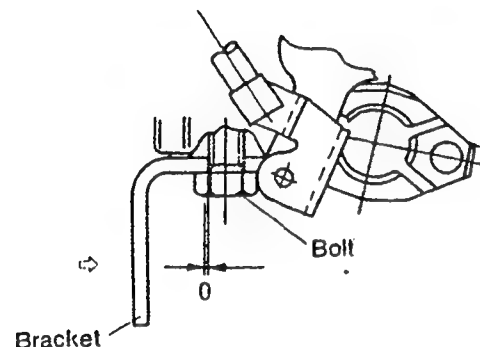
Injection pump No: 104648-1120 [NP-VE4/8F2500RNP61]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

### 4) Fixing the engine installation bracket

1. Fix the bracket temporarily to the pump.
2. Move the bracket in the direction of the arrow until the clearance is 0.
3. Fix the bracket in position using the bolts.



1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,400	2.6~ 3.0 (mm)		
1-2 Supply pump pressure	1,000	4.7~ 5.1 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	30.7~31.7 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	365	5.5~ 9.5 (cc/1,000st)		2.0
1-5 Start	100	Above 40.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,750	12.0~18.0 (cc/1,000st)		
1-7				
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,400 2.5~ 3.1	2,000 4.2~ 5.4	2,750 6.9~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 3.5~ 4.1	1,400 4.7~ 5.1	2,500 7.4~ 8.0
2-3 Overflow delivery	N = rpm cc/10s	1,400 58.0~102.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	30.2~32.2		
	600	25.4~29.4		
	2,500	28.2~32.2		
	2,750	12.0~18.0		
	3,000	Below 4.0		
Switch OFF	365	0		
Idling position	365	5.5~9.5		
	500	Below 3.0		

### 3. Dimensions

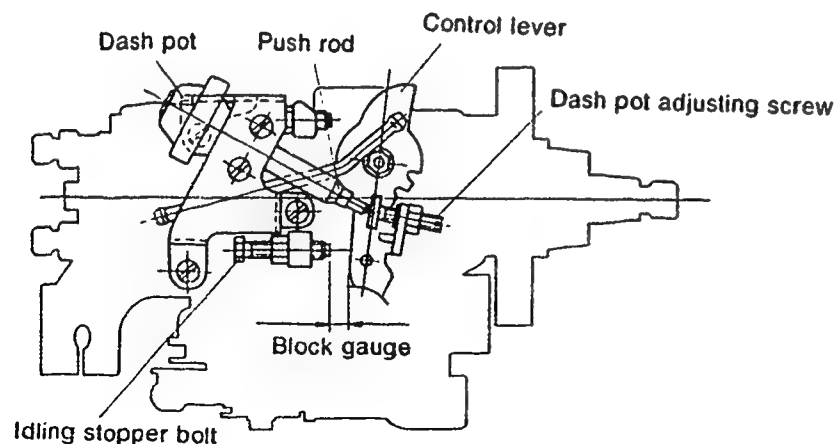
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	—	mm

### Control lever angle

α	21.0~29.0	deg
A	—	mm
β	33.0~43.0	deg
B	—	mm
γ	—	deg
C	—	mm

### DASH POT ADJUSTMENT.

- ① Insert a block gauge (thickness gauge) of thickness 8.5 in the gap between the control lever and the idling stopper bolt. (control lever angle : 13° )
- ② With the control lever positioned as described in ① above, adjust the Dashpot adjusting screw so that the Dashpot adjusting screw and the push rod are in contact. Fix using the nut.



## INJ. PUMP CALIBRATION DATA

### Distributor-type

MOTOR : CD17

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104648-2061 [NP-VE4/8F2500LNP164]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

1/3  
BOSCH No.9 460 610 013

DKKC No. 104748-2071

Date : 20.Nov.1986

Company : NISSAN

No. 16700 16A60

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	5.3~ 8.3 (cc/1,000st)		3.0
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm	1,200	1,800	2,500
	mm	1.7~2.5	4.0~ 5.2	6.8~ 8.0
2-2 Supply pump	N = rpm	1,200	1,800	2,500
	kg/cm <sup>2</sup>	3.0~ 3.8	4.4~ 5.2	6.1~ 6.9
2-3 Overflow delivery	N = rpm	1,200		
	cc/10s	36.0~80.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6.0		
Switch OFF	400	0		
Idling position	400	4.8~ 8.8		
	600	Below 3.0		
Partial load	700	10.0~20.0		

2-5  
Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## 3. Dimensions

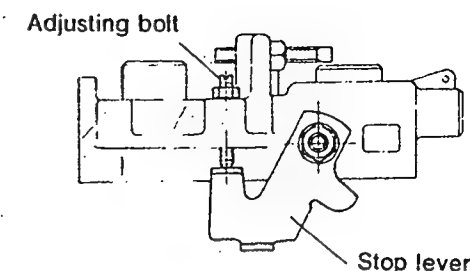
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	—	mm

## Control lever angle

α	21.0~29.0	deg
A	2.5~ 8.0	mm
β	39.0~49.0	deg
B	11.0~10.0	mm
γ	13.5~14.5	deg
C	8.6~ 9.2	mm

## Starting Injection Quantity Adjustment

Adjust the starting injection quantity (item 1/5) using the adjusting bolt (as shown in the figure at right).



## W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

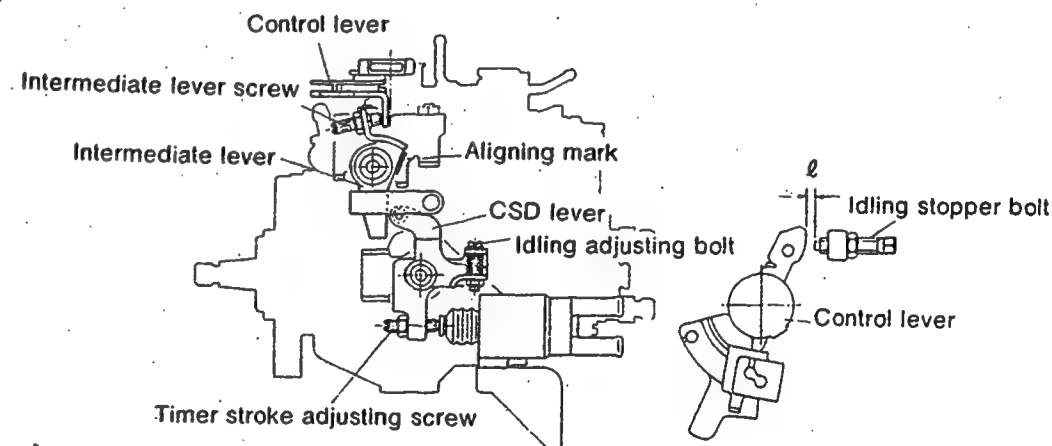


Fig. 1

### 2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of 1.0±0.05 mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

### 3) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

#### Notes :

1. The temperature of the wax must be below  $30^\circ\text{C}$  when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (beacket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

#### Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0284t + 1.367$

When  $20 \leq t \leq 60$ :  $T = -0.02t + 1.2$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $\ell = -0.0667t + 3.23$

When  $20 \leq t \leq 60$ :  $\ell = -0.05t + 2.9$

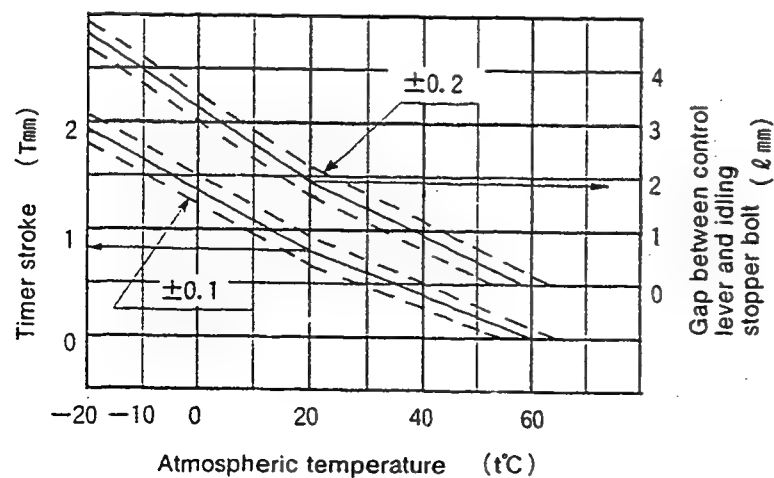


Fig. 2



## INJ. PUMP CALIBRATION DATA

## Distributor-type

BOSCH No.9 460 610 014

DKKC No. 104748-2091

Date: 20.Nov.1986 [2]

Company: NISSAN

No. 16700 16A70

For Test Condition see  
Microfiche No.WP-210(N16)TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL: CD17

Injection pump No: 104648-2061 (NP-VE4/8F2500LNP164)

Pump rotation: Counter clockwise-viewed from drive side

Pre-stroke: — mm

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	5.3~ 8.3 (cc/1,000st)		3.0
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	1,200 1.7~2.5	1,800 4.0~ 5.2	2,500 6.8~ 8.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,200 3.0~ 3.8	1,800 4.4~ 5.2	2,500 6.1~ 6.9
2-3 Überlaufmenge	N = min <sup>-1</sup> cc/10s	1,200 36.0~80.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6.0		

Switch OFF	400	0		
Idling position	400	4.8~ 8.8		
	600	Below 3.0		
Partial load	700	10.0~20.0		

2-5 Solenoid	Max.cut-in voltage: 8 V Test voltage: 12~14 V
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## 3. Dimensions

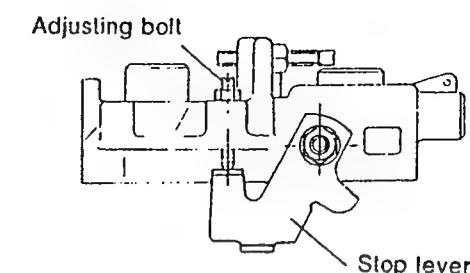
K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.5~1.7 mm
BCS	— mm

## Control lever angle

α	21.0~29.0 deg
A	2.5~ 8.0 mm
β	39.0~49.0 deg
B	11.0~10.0 mm
γ	13.5~14.5 deg
C	8.6~ 9.2 mm

## ■ Starting Injection Quantity Adjustment

Adjust the starting injection quantity  
(item 1/5) using the adjusting bolt  
(as shown in the figure at right).



## ■ W-CSD Adjustment

## 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

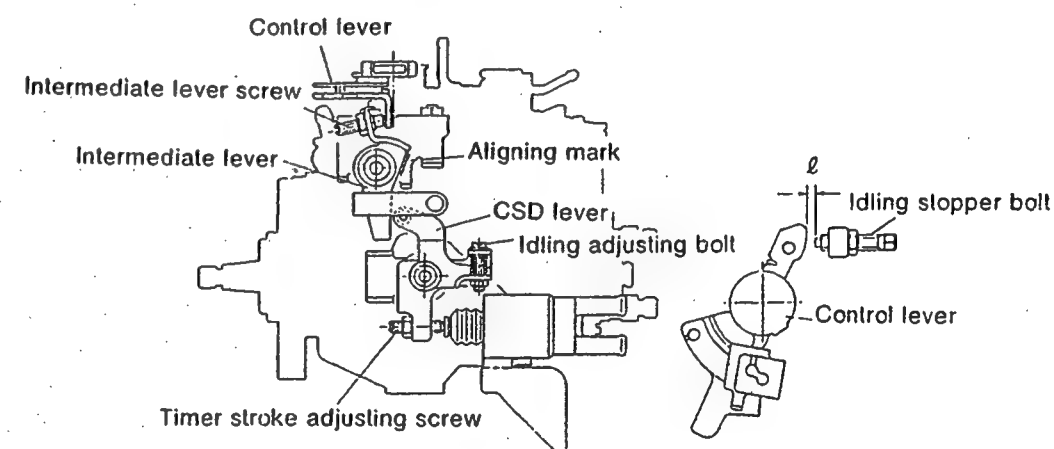


Fig. 1

## 2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.0 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

### 3) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

#### Notes :

1. The temperature of the wax must be below  $30^{\circ}\text{C}$  when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (beacket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0248t + 1.367$

When  $20 \leq t \leq 60$ :  $T = -0.02t + 1.2$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $\ell = -0.0667t + 3.23$

When  $20 \leq t \leq 60$ :  $\ell = -0.05t + 2.9$

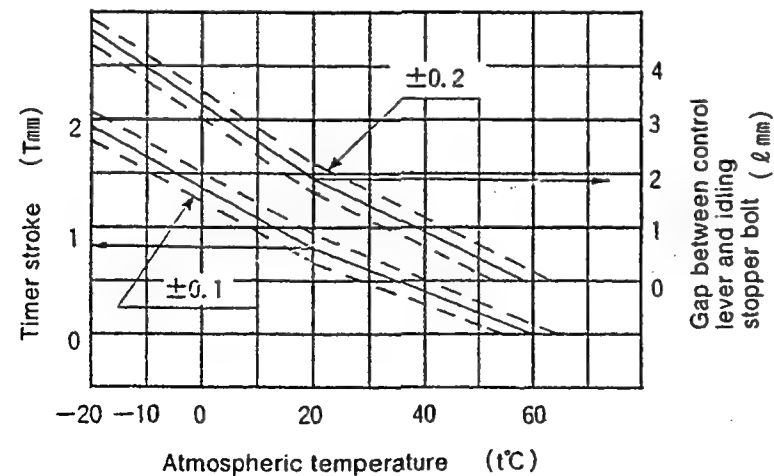


Fig. 2

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : CD17

Injection pump No: 104648-2090 [NP-VE4/8F2500LNP164]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 059  
DKKC No. 104748-2150  
Date : 20.Nov.1986 [2]  
Company : NISSAN  
No. 16700 16A66

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	8.3~11.3 (cc/1,000st)		3.0
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm	1,200	1,800	2,500
	mm	1.7~ 2.5	4.0~ 5.2	6.8~ 8.0
2-2 Supply pump	N = rpm	1,200	1,800	2,500
	kg/cm <sup>2</sup>	3.0~ 3.8	4.4~ 5.2	6.1~ 6.9
2-3 Overflow delivery	N = rpm	1,200		
	cc/10s	36.0~80.0		

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6		
Switch OFF	400	0		
Idling position	400	7.8~11.8		
	600	Below 3		
Partial load	700	13.3~20.0		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## **3. Dimensions**

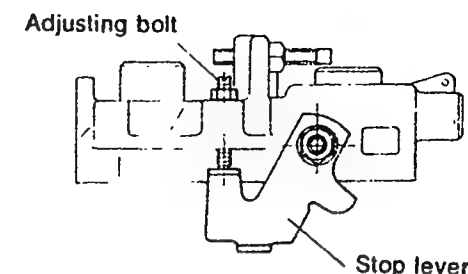
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	—	mm

### **Control lever angle**

α	21~29	deg
A	2.5~ 8.0	mm
β	37.0~47.0	deg
B	10.7~14.8	mm
γ	10.5~11.5	deg
C	6.7~ 7.3	mm

## ■ Starting Injection Quantity Adjustment

Adjust the starting injection quantity  
(item 1/5 ) using the adjusting bolt  
(as shown in the figure at right) .



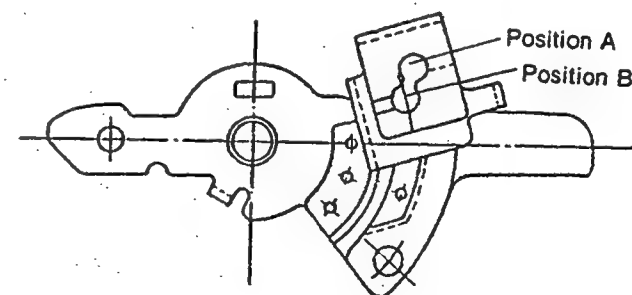
## ■ Plug positions

The plug (146616-0900) installation (shown below), depends on the value of control lever angle β .

Position A : When  $37^{\circ}(10.7\text{mm}) \leq \beta (B) < 41^{\circ}(12.4\text{mm})$

Position B : When  $41^{\circ}(12.4\text{mm}) \leq \beta (B) \leq 47^{\circ}(14.8\text{mm})$

Plug (146616-0900)



■ W-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

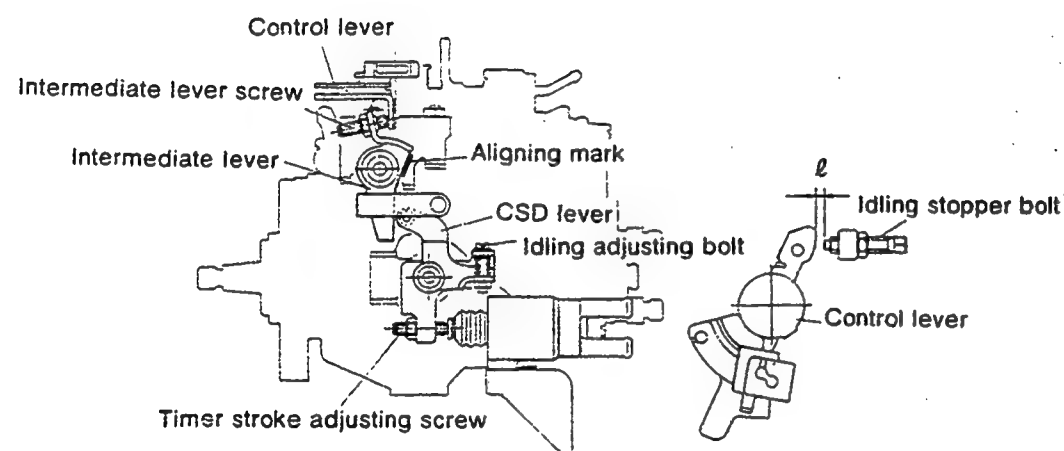


Fig. 1

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.0 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension  $l \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$  :  $T = -0.0284t + 1.367$

When  $20 \leq t \leq 60$  :  $T = -0.02t + 1.2$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$  :  $l = -0.0667t + 3.23$

When  $20 \leq t \leq 60$  :  $l = -0.05t + 2.9$

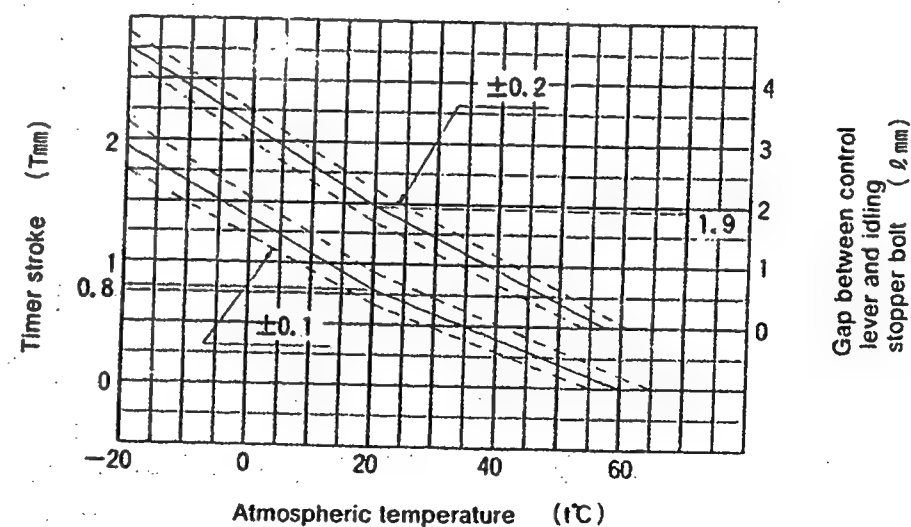


Fig. 2

## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : CD17

Injection pump No: 104648-2090 [NP-VE4/8F2500LNP164]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 061  
DKKC No. 104748-2170  
Date : 20.Nov.1986  
Company : NISSAN  
No. 15700 16A76

For Test Condition see  
Microfiche No.WP-210(N16)

104748-2170 2/4

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	8.3~11.3 (cc/1,000st)		3.0
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm	1,200	1,800	2,500
	mm	1.7~2.5	4.0~5.2	6.8~8.0
2-2 Supply pump	N = rpm	1,200	1,800	2,500
	kg/cm <sup>2</sup>	3.0~3.8	4.4~5.2	6.1~6.9
2-3 Overflow delivery	N = rpm	1,200		
	cc/10s	36.0~80.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6		
Switch OFF	400	0		
Idling position	400	7.8~11.8		
	600	Below 3		
Partial load	700	13.3~20.0		
2-5 Solenoid	Max.cut-in voltage : 8 V			
	Test voltage : 12~14 V			

## 3. Dimensions

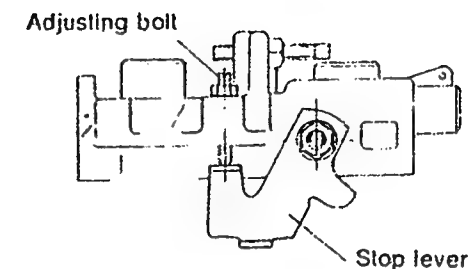
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	—	mm

## Control lever angle

α	21~29	deg
A	2.5~8.0	mm
β	37.0~47.0	deg
B	10.7~14.8	mm
γ	10.5~11.5	deg
C	6.7~7.3	mm

## Starting Injection Quantity Adjustment

Adjust the starting injection quantity  
(item 1/5) using the adjusting bolt  
(as shown in the figure at right).



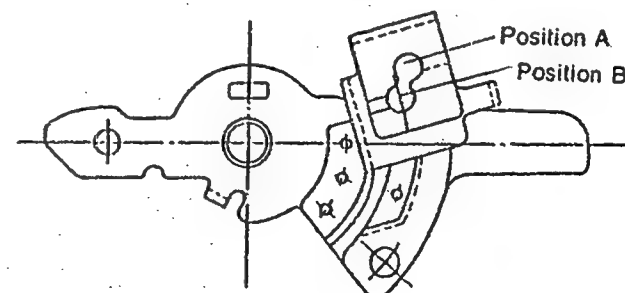
## Plug positions

The plug (146616-0900) installation (shown below), depends on the value of control lever angle β.

Position A : When  $37^{\circ}(10.7\text{mm}) \leq \beta (B) < 41^{\circ}(12.4\text{mm})$

Position B : When  $41^{\circ}(12.4\text{mm}) \leq \beta (B) \leq 47^{\circ}(14.8\text{mm})$

Plug (146616-0900)



■ W-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

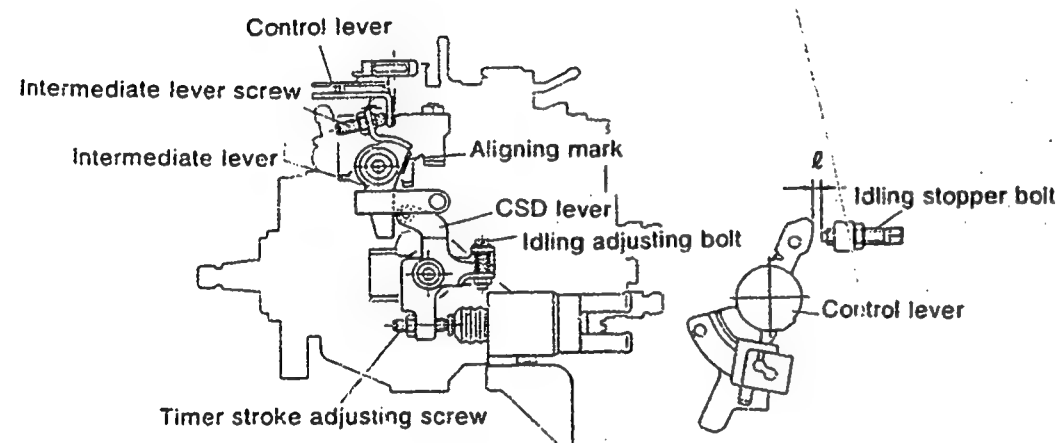


Fig. 1

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.0 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension  $l \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$  :  $T = -0.0284t + 1.367$

When  $20 \leq t \leq 60$  :  $T = -0.02t + 1.2$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$  :  $l = -0.0667t + 3.23$

When  $20 \leq t \leq 60$  :  $l = -0.05t + 2.9$

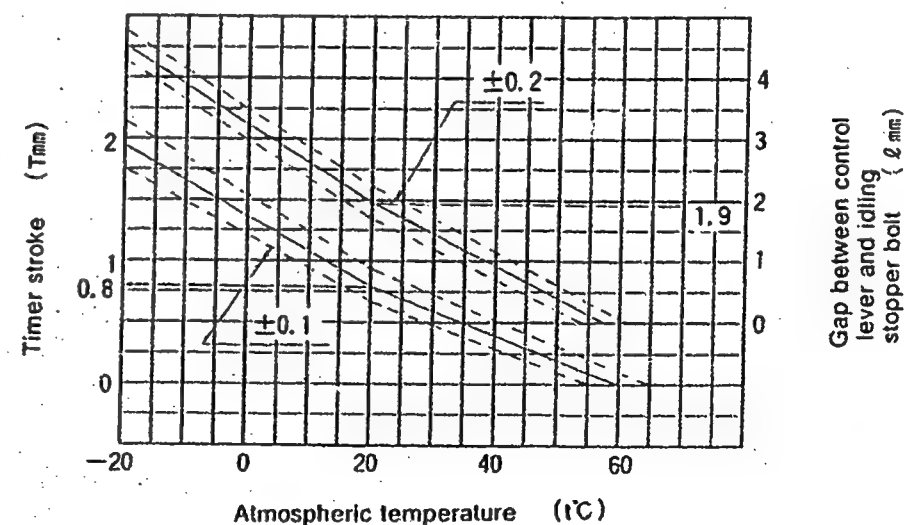


Fig. 2

## INJ. PUMP CALIBRATION DATA

### Distributor-type

ENGINE MODEL : CD17

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104648-2160 [NP-VE4/8F2500LNP164]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : - mm

BOSCH No.9 460 610 063

DKKC No. 104748-2290

Date : 20.Nov.1986

Company : NISSAN

No. 16700 16A67

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	8.3~11.3 (cc/1,000st)		3.0
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	1,200 1.7~ 2.5	1,800 4.0~ 5.2	2,500 6.8~ 8.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,200 3.0~ 3.8	1,800 4.4~ 5.2	2,500 6.1~ 6.9
2-3 Overflow delivery	N = rpm cc/10s	1,200 36.0~80.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200 600 2,500 2,700 2,900	29.0~31.0 24.8~28.8 26.7~30.7 11.4~18.4 Below 6		
Switch OFF	400	0		
Idling position	400 600	7.8~11.8 Below 3		
Partial load	700	13.3~20.0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	-	mm
Control lever angle		
α	21~29	deg
A	2.5~ 8.0	mm
β	37.0~47.0	deg
B	10.7~14.8	mm
γ	10.5~11.5	deg
C	6.7~ 7.3	mm

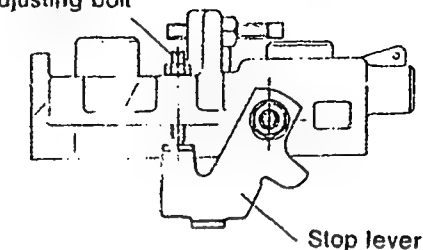
## Starting Injection Quantity Adjustment

Adjust the starting injection quantity

(item 1/5 ) using the adjusting bolt

(as shown in the figure at right) .

Adjusting bolt



Stop lever

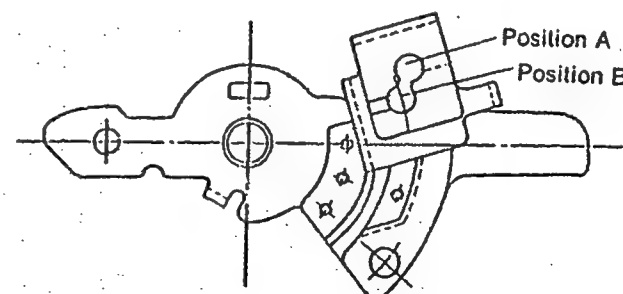
## Plug positions

The plug (146616-0900) installation (shown below), depends on the value of control lever angle β.

Position A : When  $37^{\circ}(10.7\text{mm}) \leq \beta(B) < 41^{\circ}(12.4\text{mm})$ 

Position B : When  $41^{\circ}(12.4\text{mm}) \leq \beta(B) \leq 47^{\circ}(14.8\text{mm})$ 

Plug (146616-0900)



■ W-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

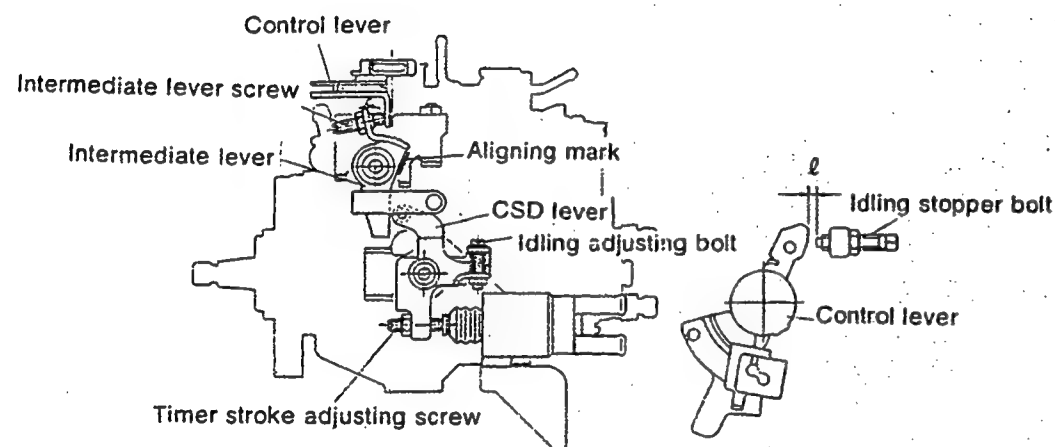


Fig. 1

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.0 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension  $l \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0284t + 1.367$

When  $20 \leq t \leq 60$ :  $T = -0.02t + 1.2$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $l = -0.0667t + 3.23$

When  $20 \leq t \leq 60$ :  $l = -0.05t + 2.9$

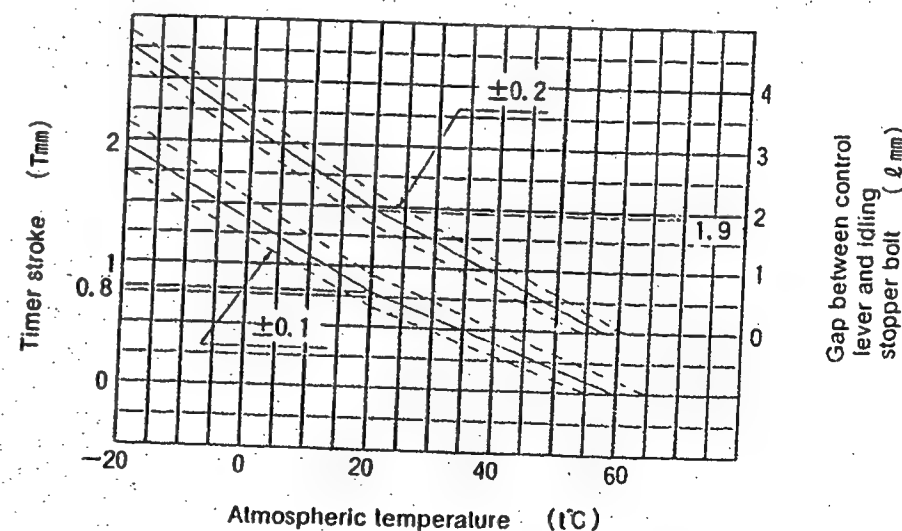


Fig. 2



# INJ. PUMP CALIBRATION DATA Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : CD17

Injection pump No: 104648-2160 [NP-VE4/8F2500LNP164]

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 065

DKKC N. 104748-2310

Date : 20.Nov.1986

Company : NISSAN

No. 16700 16A77

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	8.3~11.3 (cc/1,000st)		3.0
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	1,200 1.7~ 2.5	1,800 4.0~ 5.2	2,500 6.8~ 8.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,200 3.0~ 3.8	1,800 4.4~ 5.2	2,500 6.1~ 6.9
2-3 Overflow delivery	N = rpm cc/10s	1,200 36.0~80.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6		

Switch OFF	400	0		
Idling position	400	7.8~11.8		
	600	Below 3		

Partial load	700	13.3~20.0		
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2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V
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## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.5~1.7 mm
BCS	— mm

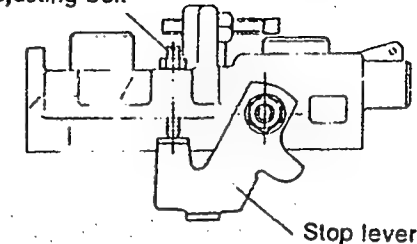
## Control lever angle

α	21~29 deg
A	2.5~ 8.0 mm
β	37.0~47.0 deg
B	10.7~14.8 mm
γ	10.5~11.5 deg
C	6.7~ 7.3 mm

## Starting Injection Quantity Adjustment

Adjust the starting injection quantity  
(item 1/5 ) using the adjusting bolt  
(as shown in the figure at right) .

Adjusting bolt



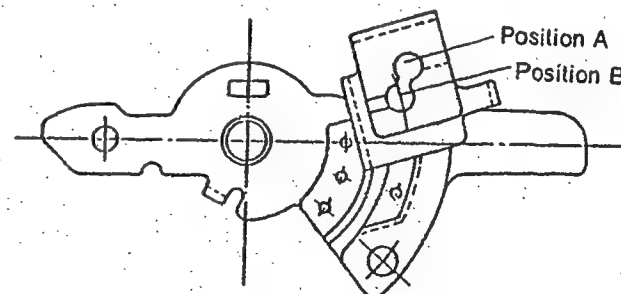
## Plug positions

The plug (146616-0900) installation (shown below), depends on the value of control lever angle  $\beta$  .

Position A : When  $37^\circ(10.7\text{mm}) \leq \beta (B) < 41^\circ(12.4\text{mm})$

Position B : When  $41^\circ(12.4\text{mm}) \leq \beta (B) \leq 47^\circ(14.8\text{mm})$

Plug (146616-0900)



## W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

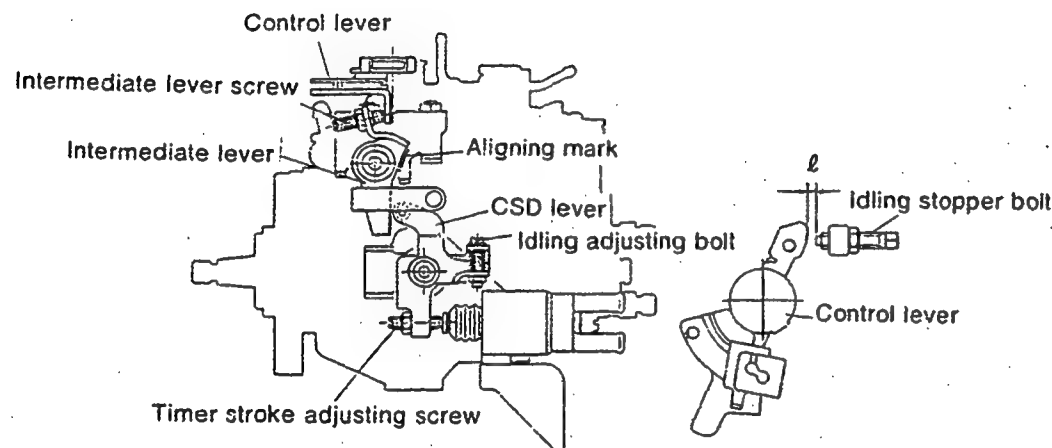


Fig. 1

### 2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.0 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

### 3) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0284t + 1.367$

When  $20 \leq t \leq 60$ :  $T = -0.02t + 1.2$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $\ell = -0.0667t + 3.23$

When  $20 \leq t \leq 60$ :  $\ell = -0.05t + 2.9$

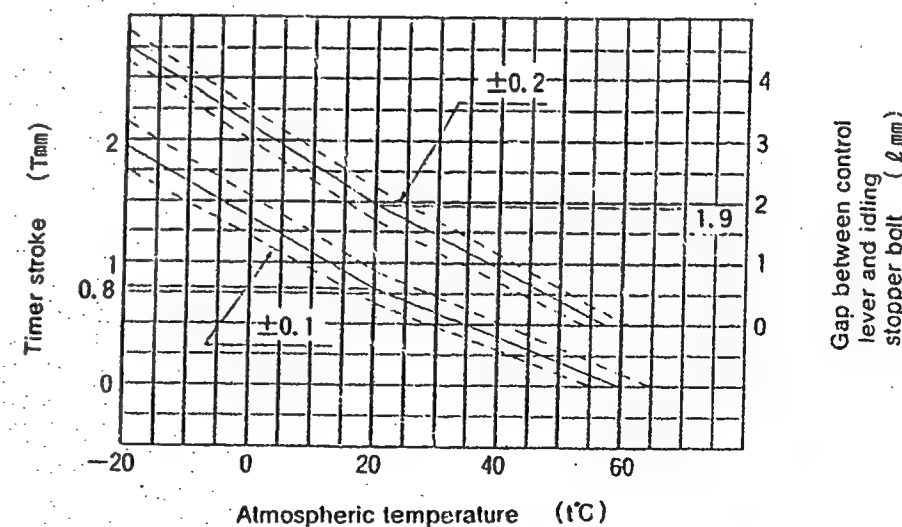


Fig. 2

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : CD17

BOSCH No.9 460 610 067

DKKC No. 104748-2380

Date : 20.Nov.1986

Company : NISSAN

No. 16700 16A68

Injection pump No: 104648-2180 [NP-VE4/8F2500LNP164]

Pump rotation : Counter clockwise-viewed from drive side

For Test Condition see  
Microfiche No.WP-210(N16)

Pre-stroke : — mm

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		2.5
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		
		(cc/1,000st)		
1-4 Idle speed regulation	400	8.3~11.3 (cc/1,000st)		
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm	1,200	1,800	2,500
	mm	1.7~ 2.5	4.0~ 5.2	6.8~ 8.0
2-2 Supply pump	N = rpm	1,200	1,800	2,500
	kg/cm <sup>2</sup>	3.0~ 3.8	4.4~ 5.2	6.1~ 6.9
2-3 Overflow delivery	N = rpm	1,200		
	cc/10s	36.0~80.0		

## **2-4 Fuel Injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6		
Switch OFF	400	0		
Idling position	400	7.8~11.8		2.5
	600	Below 3		
Partial load	700	13.3~20.0		

## **3. Dimensions**

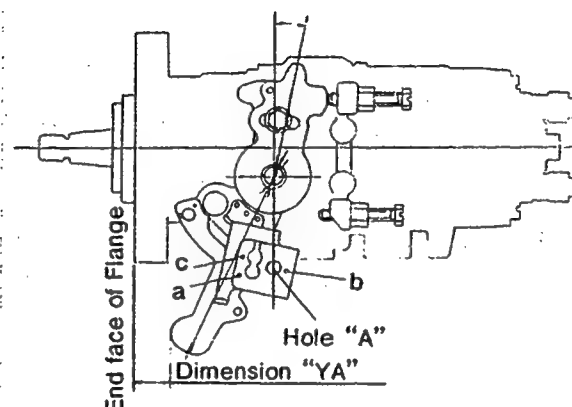
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	—	mm

## **Control lever angle**

$\alpha$	1~1	deg
YA	15.4~18.1	mm
$\beta$	37.0~47.0	deg
B	10.7~14.8	mm
$\gamma$	10.5~11.5	deg
C	6.7~ 7.3	mm

## **Control Lever Angle Measurement Position**

① Measure the control lever angles ( $\alpha, \beta, \gamma$ ) at hole A.



② Marking positions

The control lever is marked (painted) at the positions shown below, depending on control lever angle  $\beta$ .

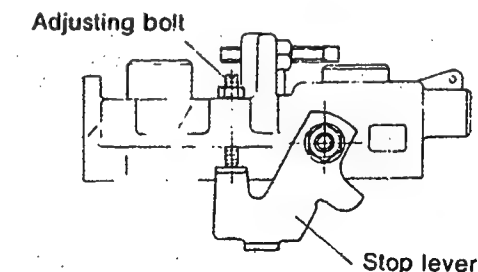
Position "a"  $\Rightarrow \beta \leq 39.5^\circ$  (B=11.7mm)

Position "b"  $\Rightarrow 39.5^\circ$  (B=11.7mm)  $< \beta \leq 42.5^\circ$  (B=13.0mm)

Position "c"  $\Rightarrow \beta > 42.5^\circ$  (B=13.0mm)

## **Starting Injection Quantity Adjustment**

Adjust the starting injection quantity  
(item 1/5.) using the adjusting bolt  
(as shown in the figure at right).



# W-CSD Adjustment

## 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

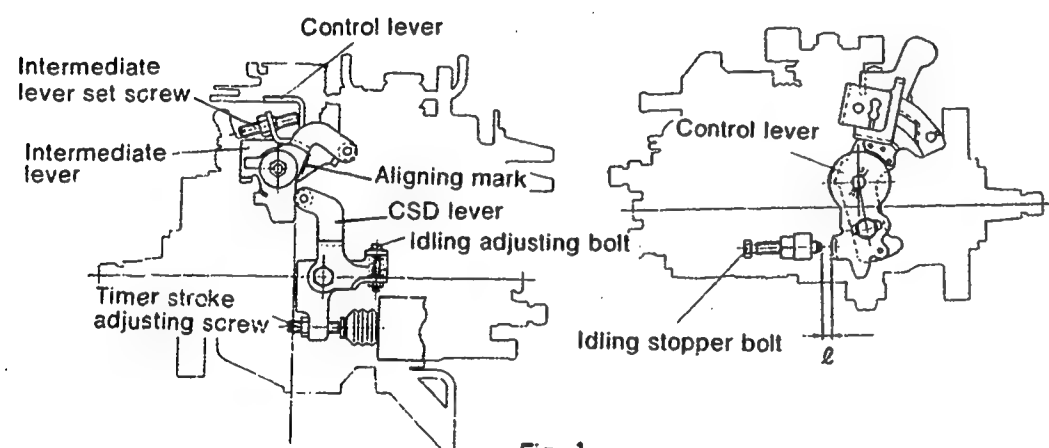


Fig. 1

## 2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.9 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

## 3) CSD lever adjustment

1. Calculate the block gauge dimension  $L \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

### Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0367t + 1.284$

When  $20 \leq t \leq 40$ :  $T = -0.0275t + 1.1$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $L = -0.0867t + 3.63$

When  $20 \leq t \leq 40$ :  $L = -0.075t + 3.4$

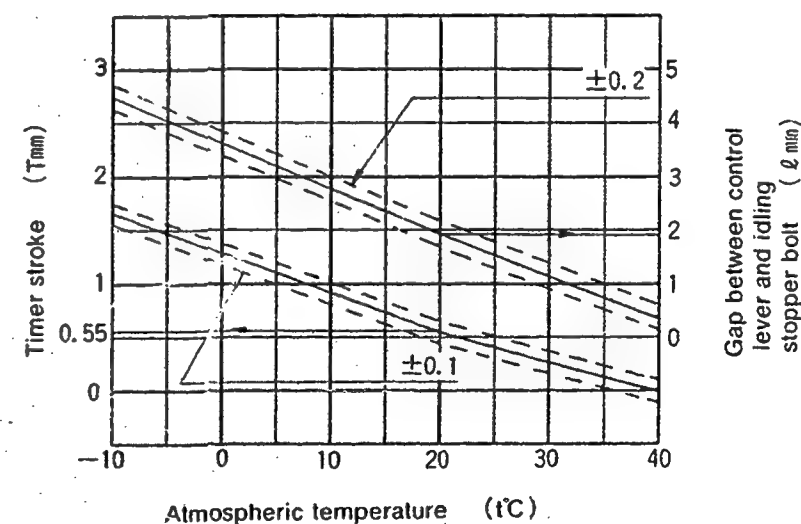


Fig. 2

## INJ. PUMP CALIBRATION DATA

### Distributor-type

ENGINE MODEL : CD17

TEST OIL:  
ISO 4113 or  
SAE J967d

BOSCH No. 9 460 610 069  
DKIC No. 104748-2400  
Date: 20.Nov.1986  
Company: NISSAN  
No. 16700 16A78

Injection pump No: 104648-2180 (NP-VE4/8F2500LNP164)

Pump rotation : Counter clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.8~ 2.4 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,200	29.5~30.5 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	400	8.3~11.3 (cc/1,000st)		
1-5 Start	100	45.3~55.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.9~17.9 (cc/1,000st)		
1-7				
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,200 1.7~ 2.5	1,800 4.0~ 5.2	2,500 6.8~ 8.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,200 3.0~ 3.8	1,800 4.4~ 5.2	2,500 6.1~ 6.9
2-3 Overflow delivery	N = rpm cc/10s	1,200 36.0~80.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,200	29.0~31.0		
	600	24.8~28.8		
	2,500	26.7~30.7		
	2,700	11.4~18.4		
	2,900	Below 6		
Switch OFF	400	0		
Idling position	400	7.8~11.8		2.5
	600	Below 3		
Partial load	700	13.3~20.0		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.5~1.7 mm
BCS	— mm

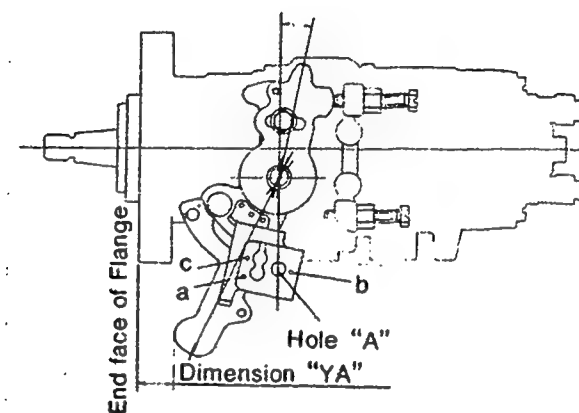
### Control lever angle

α	1~1 deg
YA	15.4~18.1 mm
β	37.0~47.0 deg
B	10.7~14.8 mm
γ	10.5~11.5 deg
C	6.7~ 7.3 mm

104748-2400 2/4

### Control Lever Angle Measurement Position

① Measure the control lever angles (α, β, γ) at hole A.



② Marking positions

The control lever is marked (painted) at the positions shown below, depending on control lever angle β.

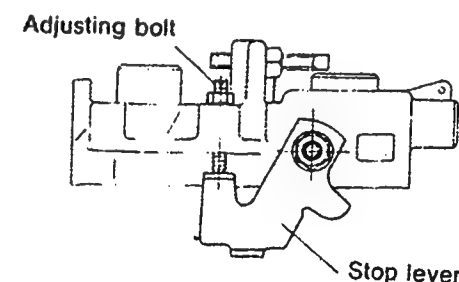
Position "a" ⇔ β ≤ 39.5° (B=11.7mm)

Position "b" ⇔ 39.5° (B=11.7mm) < β ≤ 42.5° (B=13.0mm)

Position "c" ⇔ β > 42.5° (B=13.0mm)

### Starting Injection Quantity Adjustment

Adjust the starting injection quantity (item 1/5) using the adjusting bolt (as shown in the figure at right).



■ W-CSD Adjustment

1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

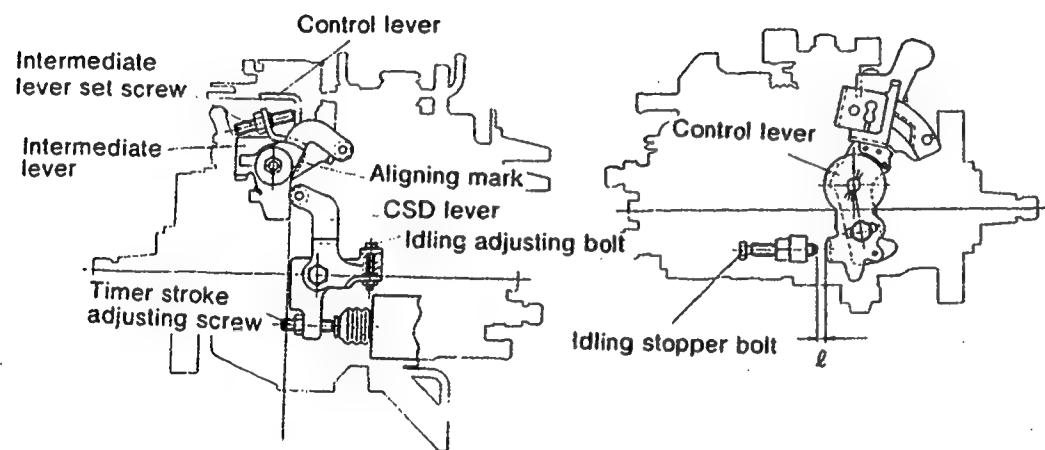


Fig. 1

2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $1.9 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

3) CSD lever adjustment

1. Calculate the block gauge dimension  $l \pm 0.05$  mm from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $-10 \leq t \leq 20$ :  $T = -0.0367t + 1.284$

When  $20 \leq t \leq 40$ :  $T = -0.0275t + 1.1$

Formula for calculating control lever and idling stopper bolt gap:

When  $-10 \leq t \leq 20$ :  $l = -0.0867t + 3.63$

When  $20 \leq t \leq 40$ :  $l = -0.075t + 3.4$

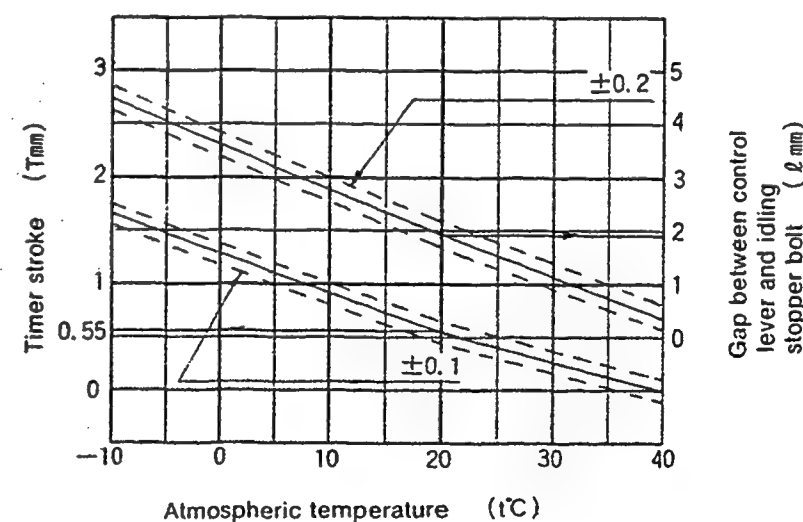


Fig. 2

## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

ENGINE MODEL : C190

Injection pump No: 104649-1080 [NP-VE4/9F2175RNP21]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 015

DKKC No. 104749-1020

Date: 20.Nov.1986 [0]

Company: ISUZU

No. 515601 0700

For Test Condition see  
Microfiche No.WP-210(N16)

104749-1020

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	3.6~ 4.0 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	34.2~35.2 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	315	4.5~ 8.5 (cc/1,000st)		2.0
1-5 Start	100	Above 57 (cc/1,000st)		
1-6 Full-load speed regulation	2,440	6.1~12.1 (cc/1,000st)		
1-7 CSD Adjustment	600~800	Release speed		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	1,000 0.9~ 2.1	1,500 3.5~ 4.1	2,300 6.9~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 3.8~ 4.4	1,500 5.2~ 5.6	2,150 6.5~ 7.1
2-3 Overflow delivery	N = rpm cc/10s	1,000 52.0~ 95.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	33.7~35.7		
	600	23.8~27.8		
	2,175	29.3~33.3		
	2,440	6.1~12.1		
	2,550	Below 4.0		
Switch OFF	315	0		
Idling position	315	4.5~ 8.5		
	365	Below 3.5		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

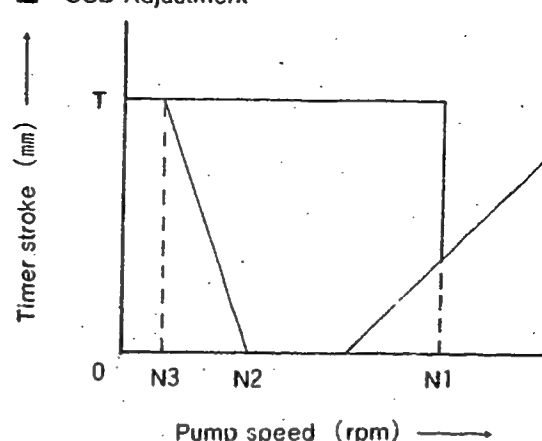
## 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.7~1.9 mm
BCS	— mm

## Control lever angle

α	21.0~29.0 deg
A	— mm
β	36.0~46.0 deg
B	— mm
γ	— deg
C	— mm

## CSD Adjustment



Standard values

N1 (Release speed) ..... 600~800rpm

N2 ..... Less than 225rpm

T ..... 1.9~2.3mm

## 1) Bleed of air

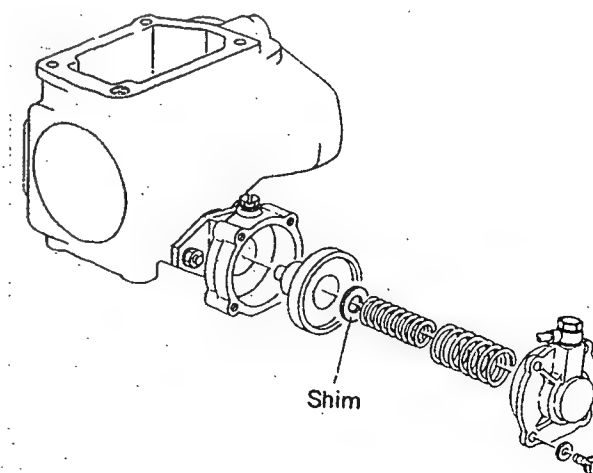
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

## 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $700 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.





## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : C190

BOSCH No.9 460 610 104

DKKC No. 104749-1060

Date : 20.Nov.1986

Company : ISUZU

No. 515601 0980

Injection pump No: 104649-1110 [NP-VE4/9F2225RNP27]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	3.6~ 4.0 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	34.2~35.2 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	4.5~ 8.5 (cc/1,000st)		2.0
1-5 Start	100	Above 57 (cc/1,000st)		
1-6 Full-load speed regulation	2,650	5.0~11.0 (cc/1,000st)		
1-7 CSD Adjustment	600~800	Release speed		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,000 0.9~ 2.1	1,500 3.5~ 4.1	2,300 6.9~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 3.8~ 4.4	1,500 5.2~ 5.6	2,150 6.5~ 7.1
2-3 Overflow delivery	N = rpm cc/10s	1,000 52.0~ 95.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	33.7~35.7		
	600	23.8~27.8		
	2,225	29.5~33.5		
	2,650	5.0~11.0		
	2,800	Below 4.0		
Switch OFF	350	0		
Idling position	350	4.5~ 8.5		
	400	Below 3.5		

2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V
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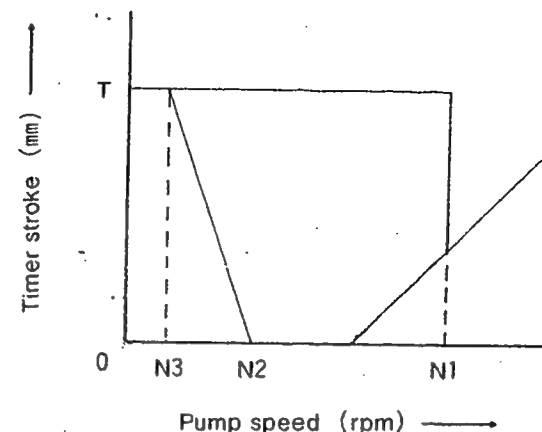
### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.7~1.9 mm
BCS	— mm

### Control lever angle

α	21.0~29.0 deg
A	— mm
β	36.0~46.0 deg
B	— mm
γ	— deg
C	— mm

### CSD Adjustment



Standard values

N1 (Release speed) ..... 600~800rpm

N2 ..... Less than 225rpm

T ..... 1.9~2.3mm

### 1) Bleed of air

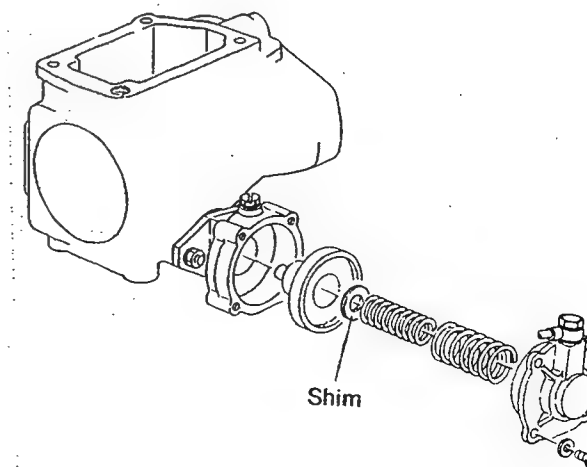
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $700 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed,check that there is no leakage from the CSD overflow.





## INJ. PUMP CALIBRATION DATA

## Distributor-type

TEST OIL:  
I S O 4113 or  
S A E J967d

MOTOR : CD17

BOSCH No.9 460 610 194

DKKC No. 104748-2450

Date : 20.Nov.1986

Company : NISSAN

No. 16700 62M00

Injection pump No: 104648-2450 [NP-VE4/8F2500LNP427]

Pump rotation : Counter clockwise-viewed from drive side

For Test Condition see  
Microfiche No.WP-210(N16)

Pre-stroke : — mm

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,200	1.5~ 2.1 (mm)		
1-2 Supply pump pressure	1,200	3.1~ 3.7 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,000	27.1~28.1 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	360	3.7~ 6.7 (cc/1,000st)		
1-5 Start	100	50.3~60.3 (cc/1,000st)		
1-6 Full-load speed regulation	2,700	11.8~17.8 (cc/1,000st)		
1-7				
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm	1,200	1,800	2,500
	mm	1.4~ 2.2	3.5~ 4.7	6.9~ 7.8
2-2 Supply pump	N = rpm	1,200	1,800	2,500
	kg/cm <sup>2</sup>	3.0~ 3.8	4.4~ 5.2	6.1~ 6.9
2-3 Overflow delivery	N = rpm	1,200		
	cc/10s	36.0~80.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,000	26.6~28.6		
	600	24.8~28.8		
	2,500	24.3~28.3		
	2,700	11.3~18.3		
	2,900	Below 6.0		
Switch OFF	360	0		
Idling position	360	3.2~7.2 Below 3.0		2.5
Partial load	700	10.8~19.8		

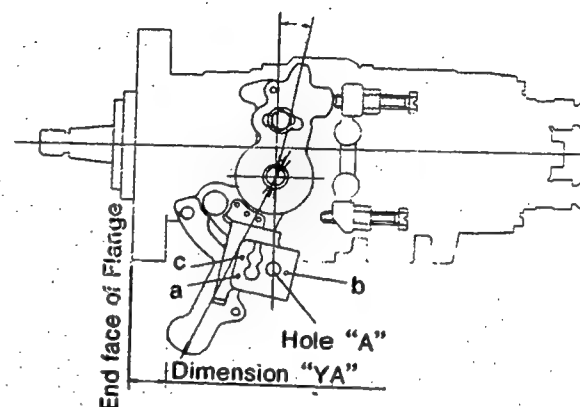
## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.5~1.7	mm
BCS	—	mm

## Control lever angle

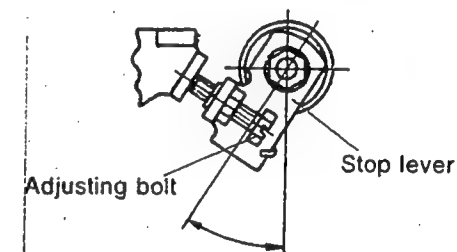
$\alpha$	1.0~—1.0	deg
YA	15.4~18.1	mm
$\beta$	39.0~49.0	deg
B	11.0~16.0	mm
$\gamma$	13.5~14.5	deg
C	8.6~ 9.2	mm

## Control Lever Angle Measurement Position

① Measure the control lever angles ( $\alpha, \beta, \gamma$ ) at hole A.

## Starting Injection Quantity Adjustment

Adjust the starting injection quantity  
(item 1/5 ) using the adjusting bolt  
(as shown in the figure at right) .



DIESEL KIKI

DIESEL KIKI CO. LTD.  
Service Department3-6-7 SHIBUYA, SHIBUYA-KU, TOKYO 150, JAPAN  
Tel. (03) 400-1551 Fax: (03) 499-4115

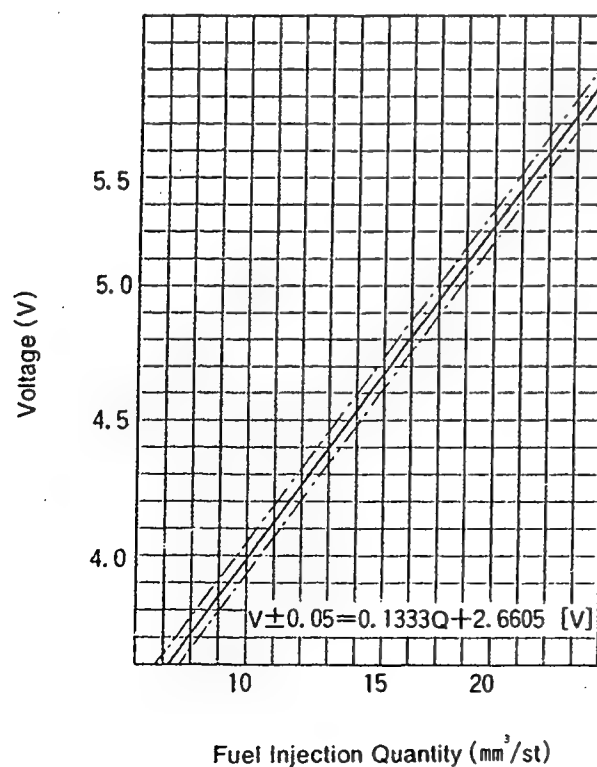
## POTENTIOMETER ADJUSTMENT

Under the following conditions, after potentiometer installation position so that the out-put voltage equals the specified value.

Adjustment Conditions			Specified Value	Remarks
Control lever position	Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Adjustment Value Out-put voltage (V)	
(Approx 14°)	700	measure	measure	Adjusting point
Idle	—	—	—	Check point
Full speed	—	—	—	Check point

[In-put Voltage: 10V]

※ A control lever position of approximately 14°, means that a block gauge of 8.9 mm thickness is inserted between the control lever and the idling stopper bolt.



## W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

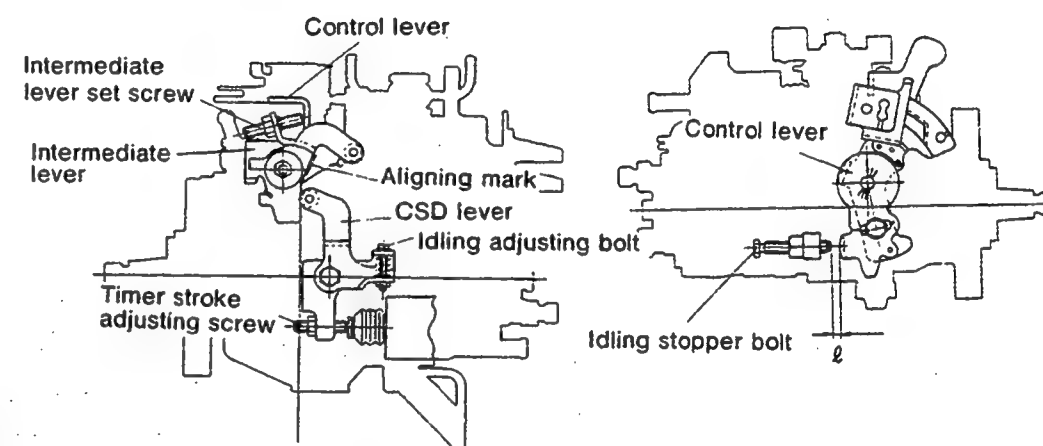


Fig. 1

### 2) Intermediate lever position adjustment

1. Insert a block gauge (thickness gauge) of  $4.1 \pm 0.05$  mm thickness between the control lever and the idling stopper bolt.
2. Align the intermediate lever with the aligning mark.
3. Adjust the intermediate lever set screw so that the control lever and intermediate lever set screw are in contact, and then fix in position using the locknut.

### 3) CSD lever adjustment

1. Calculate the block gauge dimension  $\ell \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling bolt, adjust so that the CSD lever roller and intermediate lever are in contact.

#### Notes :

1. The temperature of the wax must be below  $30^\circ\text{C}$  when adjusting.
2. When inserting a block gauge (thickness gauge) between the control lever (beacket) and the idling stopper bolt, use the idling adjusting bolt to separate the CSD lever and intermediate lever so that no excessive force is exerted on them.

#### Formula for calculating Fig. 2

Formula for calculating timer stroke:

When  $10 \leq t \leq 20$   $T = -0.027t + 1.09$

When  $20 \leq t \leq 40$   $T = -0.0275t + 1.1$

Formula for calculating control lever and idling stopper bolt gap:

When  $t \leq 10$   $\ell = 4.6$

When  $10 < t \leq 20$   $\ell = -0.17t + 6.3$

When  $20 < t \leq 28.5$   $\ell = -0.235t + 7.6$

When  $28.5 < t \leq 36$   $\ell = -0.12t + 4.32$

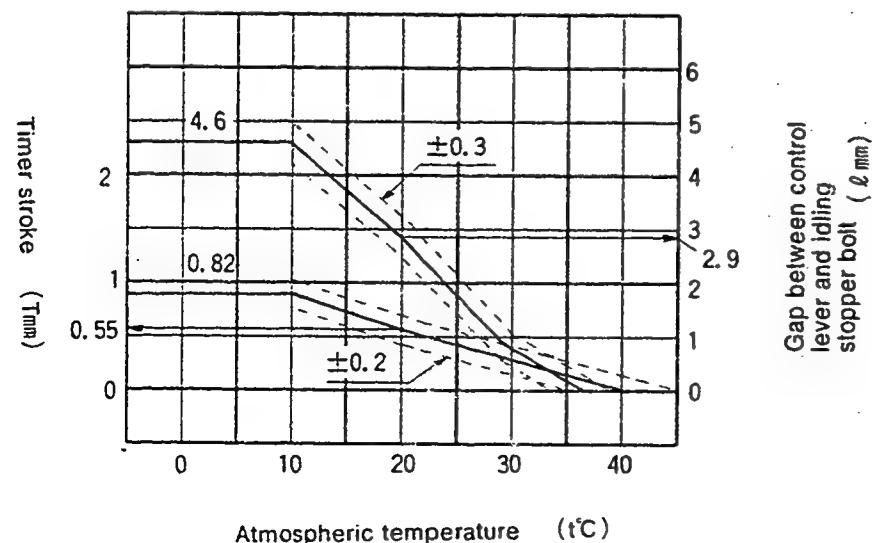


Fig. 2

## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : C223

Injection pump No: 104649-1170 (NP-VE4/9F2175RNP78)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 016

DKKC No. 104749-1170

Date : 20 Nov. 1986

Company : ISUZU

No. 51560\* 0861

For Test Condition see  
Microfiche No.WP-210(N16)

104749-1170

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	40.1~41.1 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	5.5~ 9.5 (cc/1,000st)		2.0
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,440	10.4~16.4 (cc/1,000st)		
1-7 CSD Adjustment	500~700	Release speed		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.1~ 4.7	2,175 6.9~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 3.8~ 4.4	1,500 5.2~ 5.6	2,175 6.6~ 7.2
2-3 Overflow delivery	N = rpm cc/10s	1,000 52.0~ 95.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	39.6~41.6		
	600	30.0~34.0		
	2,175	34.7~38.7		
	2,440	10.4~16.4		
	2,550	Below 6.0		
Switch OFF	350	0		
Idling position	350	5.5~ 9.5		
	450	Below 3		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

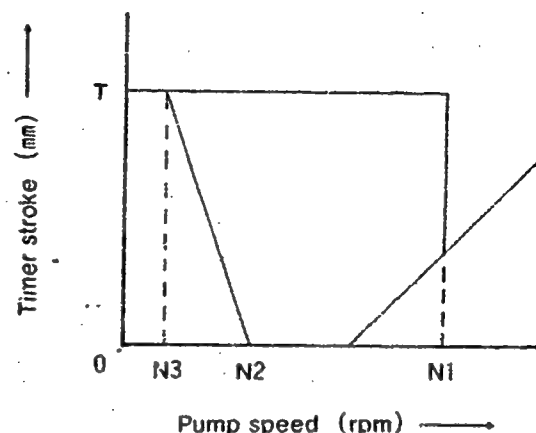
### 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm

### Control lever angle

α	21.0~29.0	deg
A	—	mm
β	36.5~46.5	deg
B	—	mm
γ	—	deg
C	—	mm

### ■ CSD Adjustment



### Standard values

N1 (Release speed)	500~700rpm
N2	Less than 225rpm
T	2.7~3.1mm

### 1) Bleed of air.

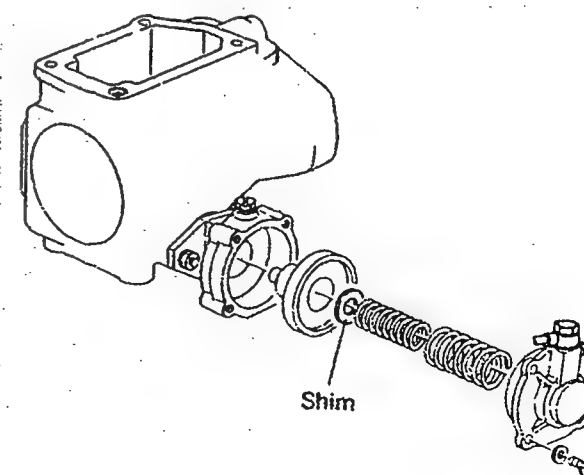
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $600 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

### Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



## INJ. PUMP CALIBRATION DATA

## Distributor-type

MOTOR : C223

TEST OIL:  
I S O 4113 or  
S A E J967d

Injection pump No: 104649-1170 [NP-VE4/9F2175RNP78]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 106

DKKC No. 104749-1180

Date : 20.Nov.1986

Company : ISUZU

No. 515601 2371

For Test Condition see  
Microfiche No.WP-210(N16)

104749-1180

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	40.1~41.1 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	5.5~ 9.5 (cc/1,000st)		2.0
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,440	10.4~16.4 (cc/1,000st)		
1-7 CSD Adjustment	500~700	Release speed		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm	1,000	1,500	2,175
	mm	1.6~ 2.8	4.1~ 4.7	6.9~ 7.8
2-2 Supply pump	N = rpm	1,000	1,500	2,175
	kg/cm <sup>2</sup>	3.8~ 4.4	5.2~ 5.6	6.6~ 7.2
2-3 Overflow delivery	N = rpm	1,000		
	cc/10s	52.0~ 95.0		

## 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	39.6~41.6		
	600	30.0~34.0		
	2,175	34.7~38.7		
	2,440	10.4~16.4		
	2,550	Below 6.0		
Switch OFF	350	0		
Idling position	350	5.5~ 9.5		
	450	Below 3		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

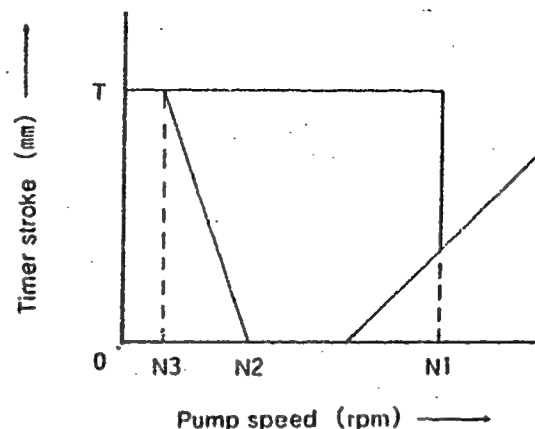
## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm

## Control lever angle

α	21.0~29.0	deg
A	—	mm
β	36.5~46.5	deg
B	—	mm
γ	—	deg
C	—	mm

## CSD Adjustment



Standard values

N1 (Release speed) ..... 500~700rpm

N2 ..... Less than 225rpm

T ..... 2.7~3.1mm

## 1) Bleed of air

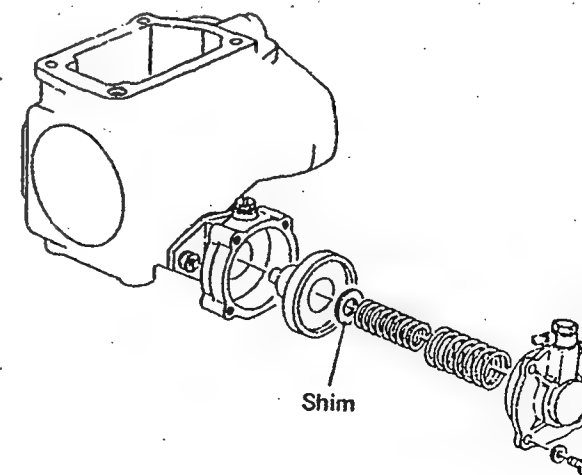
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

## 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $600 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
I S C 4113 or  
S A E J967d

ENGINE MODEL : C223

Injection pump No: 104649-1170 [NP-VE4/9F2175RNP78]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No. 9 460 610 107

DKKC No. 104749-1350

Date : 20.Nov.1986 [0]

Company : ISUZU

No. 894110 6540

For Test Condition see  
Microfiche No.WP-210(N16)

104749-1350

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	39.9~40.9 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	5.5~ 9.5 (cc/1,000st)		2
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,440	10.1~16.1 (cc/1,000st)		
1-7 CSD Adjustment	500~700	(Release speed)		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.1~ 4.7	2,175 7.0~ 7.9
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	250 1.6~ 2.2	1,000 3.8~ 4.4	1,500 5.2~ 5.6
2-3 Overflow delivery	N = rpm cc/10s	100 48.0~ 92.0		2,175 6.6~ 7.2

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	39.4~41.4		
	600	30.7~34.7		
	1,000	33.7~37.7		
	2,175	34.6~38.8		
	2,440	9.6~16.6		
	2,550	Below 5.5		
Switch OFF	350	0		
Idling position	350	5.5~ 9.5		
	450	Below 3		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

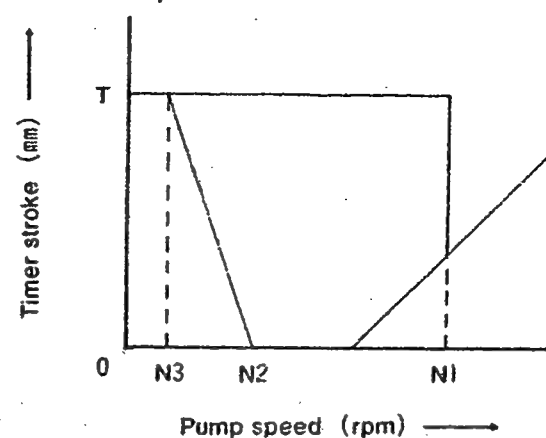
### 3. Dimensions

K	3.2~3.4 mm
KF	5.7~5.9 mm
MS	1.7~1.9 mm
BCS	— mm

### Control lever angle

α	21.0~29.0 deg
A	9.5~12.2 mm
β	36.5~46.5 deg
B	11.8~14.9 mm
γ	— deg
C	— mm

### CSD Adjustment



Standard values

N1 (Release speed) ..... 500~700rpm

N2 ..... Less than 225rpm

T ..... 2.7~3.1mm

### 1) Bleed of air

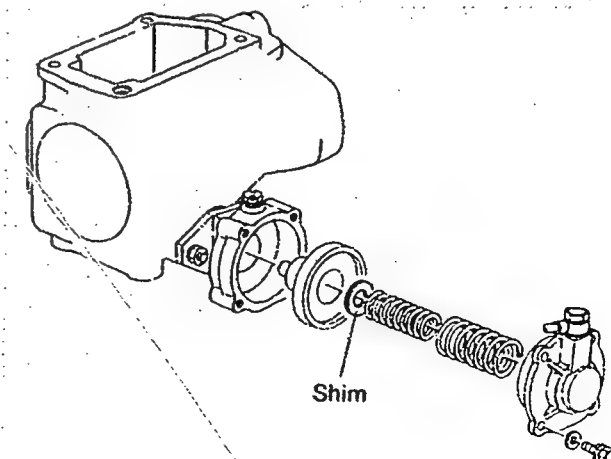
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $600 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



## INJ. PUMP CALIBRATION DATA

### Distributor-type

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : C223

Injection pump No: 104649-1170 [NP-VE4/9F2175RNP78]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 108

DKKC No. 104749-1360

Date : 20.Nov.1986 0

Company : ISUZU

No. 894110 6550

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,500	39.9~40.9 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	5.5~ 9.5 (cc/1,000st)		2
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,440	10.1~16.1 (cc/1,000st)		
1-7 CSD Adjustment	500~700	(Release speed)		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm	1,000	1,500	2,175
	mm	1.6~ 2.8	4.1~ 4.7	7.0~ 7.9
2-2 Supply pump	N = rpm	250	1,000	1,500
	kg/cm <sup>2</sup>	1.6~ 2.2	3.8~ 4.4	5.2~ 5.6
2-3 Overflow delivery	N = rpm	100		2,175
	cc/10s	48.0~ 92.0		6.6~ 7.2

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,500	39.4~41.4		
	600	30.7~34.7		
	1,000	33.7~37.7		
	2,175	34.6~38.8		
	2,440	9.6~16.6		
	2,550	Below 5.5		

Switch OFF	350	0		
Idling position	350	5.5~ 9.5		
	450	Below 3		

2-5 Solenoid	Max.cut-in voltage : 8 V
	Test voltage : 12~14 V

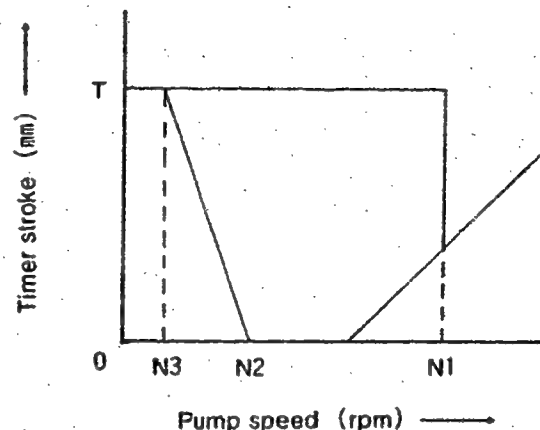
### 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm

### Control lever angle

α	21.0~29.0	deg
A	9.5~12.2	mm
β	36.5~46.5	deg
B	11.8~14.9	mm
γ	—	deg
C	—	mm

### ■ CSD Adjustment



### Standard values

N1 (Release speed)	500~700rpm
N2	Less than 225rpm
T	2.7~3.1mm

### 1) Bleed of air

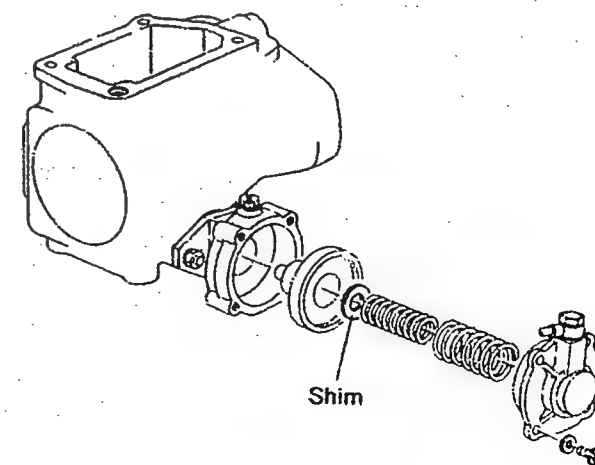
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $600 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

### Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.





# **INJ. PUMP CALIBRATION DATA**

## **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

MOTOR : C223

Injection pump No: 104649-1360 (NP-VE4/9F2175RNP223)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 115

DKKC No. 104749-1510

Date : 20.Nov.1986 [0]

Company : ISUZU

No. 894124 8430

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	35.8~36.8 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	5.6~ 9.6 (cc/1,000st)		2
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	7.8~13.8 (cc/1,000st)		3
1-7 CSD Adjustment	500~700	(Release speed)		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm	1,000	1,500	2,175
	mm	1.6~ 2.8	4.1~ 4.7	7.0~ 7.8
2-2 Supply pump	N = rpm	1,000	1,500	2,175
	kg/cm <sup>2</sup>	3.8~ 4.4	5.2~ 5.6	6.6~ 7.2
2-3 Overflow delivery	N = rpm	1,000		
	cc/10s	48.0~92.0		

## **2-4 Fuel injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	35.3~37.3		
	600	29.7~33.7		
	2,175	32.0~36.2		
	2,550	7.3~14.3		
	2,700	Below 3.5		
Switch OFF	375	0		
Idling position	375	5.6~9.6		
	500	Below 3		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## **3. Dimensions**

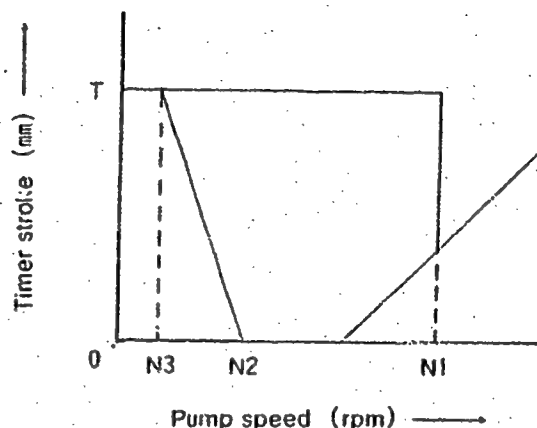
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
ECS	—	mm

## **Control lever angle**

α	21.0~29.0	deg
A	9.6~12.2	mm
β	37.0~47.0	deg
B	11.9~15.1	mm
γ	—	deg
C	—	mm

104749-1510

## **■ CSD Adjustment**



## **Standard values**

N1 (Release speed) ..... 500~700rpm  
N2 ..... Less than 225rpm  
T ..... 2.7~3.1mm

## **1) Bleed of air**

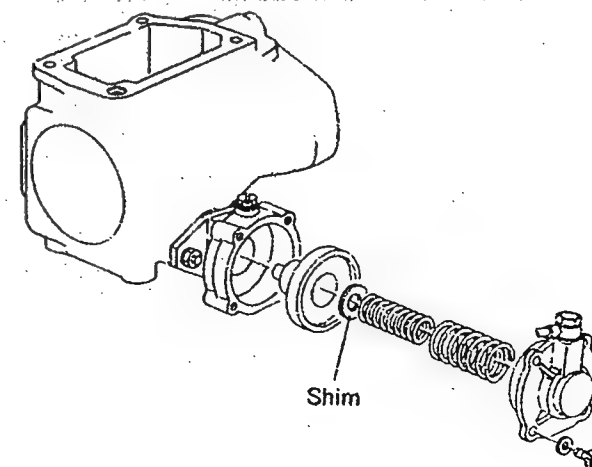
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

## **2) Adjustment**

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of 600±100 rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.





## INJ. PUMP CALIBRATION DATA

### Distributor-type

MOTOR : C223

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104649-1380 (NP-VE4/9F2175RNP225)

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 122

DKKC No. 104749-1580

Date : 20.Nov.1986

Company : ISUZU

No. 894124 8580

For Test Condition see  
Microfiche No.WP-210(N16)

104749-1580

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	35.8~36.8 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	5.6~ 9.6 (cc/1,000st)		2
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	7.8~13.8 (cc/1,000st)		3
1-7 CSD Adjustment	500~700	(Release speed)		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.1~ 4.7	2,175 7.0~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 3.8~ 4.4	1,500 5.2~ 5.6	2,175 6.6~ 7.2
2-3 Overflow delivery	N = rpm cc/10s	1,000 48.0~92.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	35.3~37.3		
	1,500	29.7~33.7		
	2,175	32.0~36.2		
	2,550	7.3~14.3		
	2,700	Below 2.5		
Switch OFF	375	0		
Idling position	375	5.6~9.6		
	500	Below 3		

2-5 Solenoid  
Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

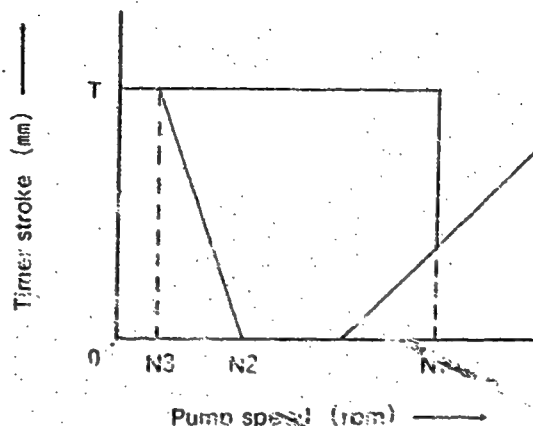
### 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm

### Control lever angle

α	21.0~29.0	deg
A	9.6~12.2	mm
β	37.0~47.0	deg
B	11.9~15.1	mm
γ	—	deg
δ	—	mm

### CSD Adjustment



### Standard values

N1 (Release speed)	500~700rpm
N2	Less than 225rpm
T	2.7~3.1mm

### 1) Bleed of air

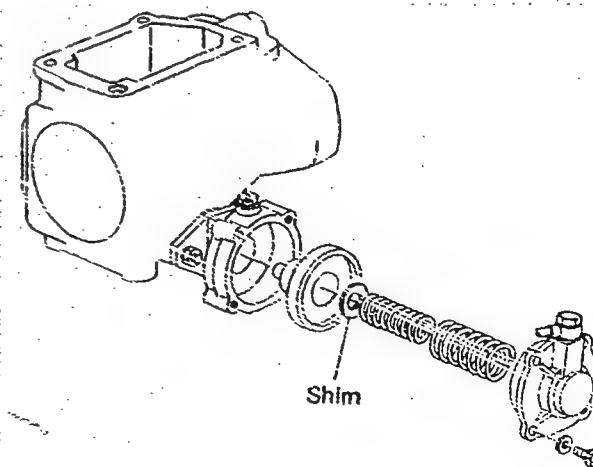
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of  $600 \pm 100$  rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

### Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



## INJ. PUMP CALIBRATION DATA

### Distributor-type

MOTOR : C223

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104649-1380 [NP-VE4/9F2175RNP225]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

BOSCH No.9 460 610 123

DKKC No. 104749-1590

Date: 20.Nov.1986

Company: ISUZU

No. 894124 8590

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,500	4.2~ 4.6 (mm)		
1-2 Supply pump pressure	1,500	5.2~ 5.6 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	35.8~36.8 (cc/1,000st)		3
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	5.6~ 9.6 (cc/1,000st)		2
1-5 Start	100	Above 63 (cc/1,000st)		
1-6 Full-load speed regulation	2,550	7.8~13.8 (cc/1,000st)		3
1-7 CSD Adjustment	500~700	(Release speed)		
1-8				

### 2. Test Specifications

2-1 Timing device	N = rpm mm	1,000 1.6~ 2.8	1,500 4.1~ 4.7	2,175 7.0~ 7.8
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	1,000 3.8~ 4.4	1,500 5.2~ 5.6	2,175 6.6~ 7.2
2-3 Overflow delivery	N = rpm cc/10s	1,000 48.0~92.0		

### 2-4 Fuel injection quantities

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	35.3~37.3		
	600	29.7~33.7		
	2,175	32.0~36.2		
	2,550	7.3~14.3		
	2,700	Below 3.5		
Switch OFF	375	0		
Idling position	375	5.6~9.6		
	500	Below 3		

2-5 Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

### 3. Dimensions

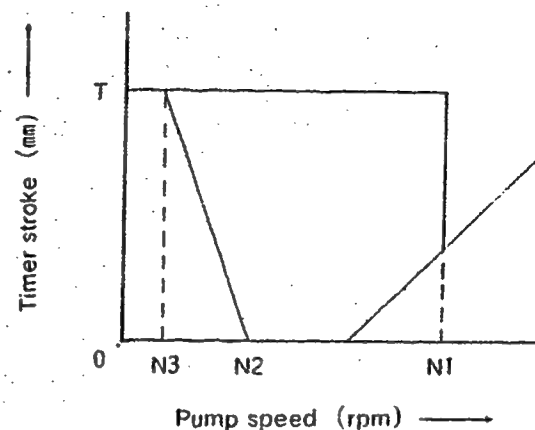
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.7~1.9	mm
BCS	—	mm

### Control lever angle

α	21.0~29.0	deg
A	9.6~12.2	mm
β	37.0~47.0	deg
B	11.9~15.1	mm
γ	—	deg
C	—	mm

104749-1590

### ■ CSD Adjustment



### Standard values

N1 (Release speed)	500~700rpm
N2	Less than 225rpm
T	2.7~3.1mm

### 1) Bleed of air

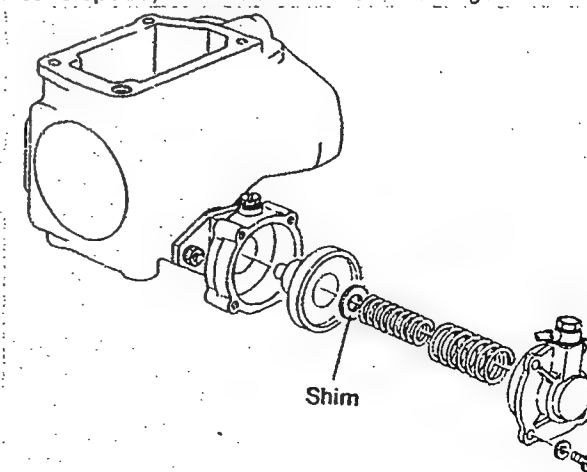
1. Run the engine at N1 or above.
2. Gradually decrease the pump speed and check the 0 point of the measuring device.
3. Run the pump at a speed midway between N2 and N3.
4. Check that the test oil flows from the CSD overflow.

### 2) Adjustment

1. Check that the timer stroke is T when the pump is stopped.
2. Adjust the shim thickness so that at the CSD release point the timer piston begins moving in the timer stroke decrease direction at a pump speed of 600±100 rpm.
3. Gradually decrease the pump speed, and check that the CSD begins to operate at speeds less than N2.

### Note :

When measuring the release speed, check that there is no leakage from the CSD overflow.



# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

TEST OIL:  
ISO 4113 or  
SAE J967d

ENGINE MODEL : LD20E

Injection pump No: 104749-2230 [NP-VE4/9F2200RNP465]

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

1/3  
BOSCH No.9 460 610 195  
DKKC No. 104749-2230  
Date : 20.Nov.1986 [0]  
Company : NISSAN(MISA)  
No. 16700 D9700

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	900	T=1.3~1.7 (mm)		
1-2 Supply pump pressure	900	3.2~3.8 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	2,200	30.2~31.2 (cc/1,000st)		2.5
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	350	4.7~7.7 (cc/1,000st)		
1-5 Start	100	40.0~50.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,570	10.4~16.4 (cc/1,000st)		
1-7 Load-timer adjustment	900	0.65±0.20 (mm)		
1-8				

## **2. Test Specifications**

2-1 Timing device	N = rpm mm	900 1.2~1.8	1,800 5.5~6.7	2,200 7.2~8.4
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	900 3.1~3.9	1,800 5.1~5.9	2,200 6.0~6.8
2-3 Overflow delivery	N = rpm cc/10s	900 35.0~79.0		

## **2-4 Fuel injection quantities**

Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	2,200	29.7~31.7		
	900	29.0~33.0		
	2,570	9.9~16.9		
	2,800	Below 6.0		
Switch OFF	350	0		
Idling position	350	4.2~8.2		2.5
	500	Below 3.0		
Partial load	900	4.1~14.1		

2-5  
Solenoid Max.cut-in voltage : 8 V  
Test voltage : 12~14 V

## **3. Dimensions**

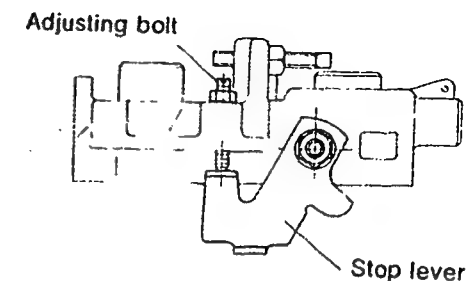
K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.1~1.3	mm
BCS	—	mm

## **Control lever angle**

α	21.0~29.0	deg
A	4.3~9.6	mm
β	36.0~46.0	deg
B	10.9~14.6	mm
γ	10.5~11.5	deg
C	6.9~7.5	mm

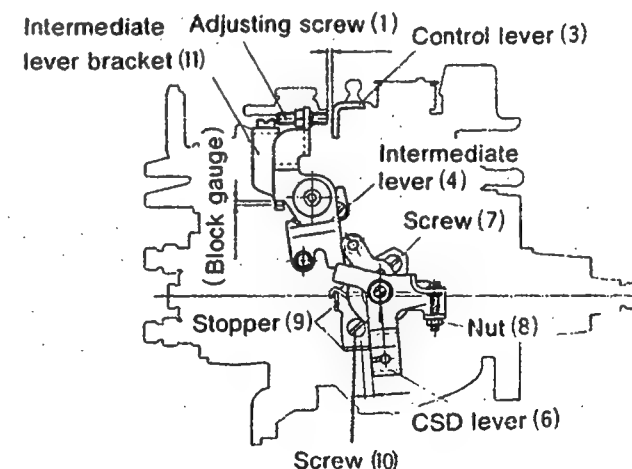
## **Starting Injection Quantity Adjustment**

Adjust the starting injection quantity  
(item 1/5) using the adjusting bolt  
(as shown in the figure at right).



## **M-CSD Adjustment**

- 1) Fix the intermediate lever adjustment screw in position. (Adjust with the M-CSD released)
1. Hold the control lever (3) in the idling position.
2. Move the adjusting screw to a horizontal position.
3. Adjust using the adjusting screw (1) so that the gap between the control lever (3) and the adjusting screw (1) is 1~2mm, and then fix using the nut.



**2 ) Fixing the M—CSD stopper (9)**

- 1 . Turn the drive shaft slowly, and fix the drive shaft in a position where a load is applied (the point where the roller in the roller holder contacts the cam surface of the cam disc) .
- 2 . Move the CSD lever (6) to the advance side.
- 3 . Fix the CSD lever in the position where the ball pin at the tip of the shaft lightly contacts the roller holder (roller holder advance angle "0") .
- 4 . Move the CSD lever to the advance side.
- 5 . Then, adjust the position of the stopper (9) so that the timer stroke is  $1.8 \pm 0.2$  mm, and fix the stopper (9) using the screw (10).

**3 ) Screw (7) Adjustment**

- 1 . Fix the control lever in the idling position.
- 2 . Move the CSD lever to the advance side.
- 3 . Then, adjust the screw (7) so that the clearance between the control lever and the idling stopper bolt is  $7.2 \pm 0.5$  mm, and fix the screw (7) using the nut (8) .

# **INJ. PUMP CALIBRATION DATA** **Distributor-type**

ENGINE MODEL : 4D65

TEST OIL:  
ISO 4113 or  
SAE J967d

Injection pump No: 104649-3000 [NP-VE4/9F2250RNP249]

BOSCH No.9 460 610 078

DKKC No. 104749-3000

Date: 20.Nov.1986

Company: MITSUBISHI

No. MD074608

Pump rotation : clockwise-viewed from drive side

Pre-stroke : — mm

For Test Condition see  
Microfiche No.WP-210(N16)

1. Setting	Pump speed (rpm)	Settings	Charge air press(mmHg)	Difference in delivery(cc)
1-1 Timing device travel	1,250	T=4.1~ 4.5 (mm)		
1-2 Supply pump pressure	1,250	4.5~ 5.1 (kg/cm <sup>2</sup> )		
1-3 Full load delivery without charge air pressure	1,250	34.2~35.2 (cc/1,000st)		3.0
Full load delivery with charge air pressure		(cc/1,000st)		
1-4 Idle speed regulation	375	5.0~ 8.0 (cc/1,000st)		2.0
1-5 Start	100	43.0~63.0 (cc/1,000st)		
1-6 Full-load speed regulation	2,750	3.5~ 9.5 (cc/1,000st)		
1-7 Load-timer Adjustment	1,250	T=0.5±0.2mm		
1-8				

## 2. Test Specifications

2-1 Timing device	N = rpm mm	600 0.7~ 1.9	1,250 3.9~ 4.7	2,250 8.0~9.0
2-2 Supply pump	N = rpm kg/cm <sup>2</sup>	600 2.9~ 3.5	1,250 4.5~ 5.1	2,250 6.8~ 7.4
2-3 Overflow delivery	N = rpm cc/10s	1,250 48.0~92.0		
2-4 Fuel injection quantities				
Speed control lever position	Pump speed (rpm)	Fuel delivery (cc/1,000st)	Charge air press(mmHg)	Difference in delivery(cc)
Full speed position	1,250	33.7~35.7		
	600	28.7~32.7		
	2,250	29.2~33.2		
	2,750	1.5~11.5		
	3,000	Below 3		
Switch OFF	375	0		
Idling position	600	Below 3		
	375	6.0~10.0		
2-5 Solenoid	Max.cut-in voltage : 8 V Test voltage : 12~14 V			

## 3. Dimensions

K	3.2~3.4	mm
KF	5.7~5.9	mm
MS	1.3~1.5	mm
BCS	—	mm

### Control lever angle

α	55.0~63.0	deg
A	10.5~16.0	mm
β	36.0~46.0	deg
B	10.5~15.0	mm
Y	—	deg
C	—	mm

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## LOAD TIMER ADJUSTMENT

### 1) Adjustment

- ① Fix the control lever in the position satisfying the following conditions.

Boost Pressure : — mmHg

Pump Speed : 1250 rpm

Fuel Injection : 21.6±1 cc/1000st  
Quantity

- ② With the control lever positioned as described in ① above, adjust the governor sleeve so that the Timer Stroke conforms to the specified values (page 1/5 )

### 2) Confirmation of Timer Characteristics

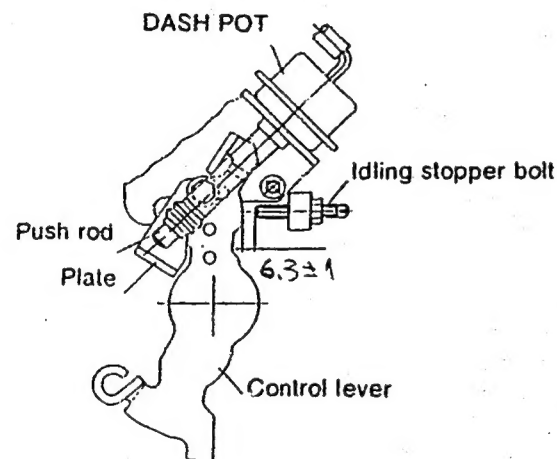
Fix the control lever in the position satisfying the following conditions, and confirm the Timer Stroke.

Control lever position			Specified Values	
Pump speed (rpm)	Fuel Injection Quantity(cc/1000st)	Boost pressure (mmHg)	Timer stroke (mm)	Timer stroke reduction value (mm)
1250	20.1~23.1	—	(3.8)	0.1~0.9
1250	10.1~13.1	—	(2.5~3.7)	11.2

## ■ DASH POT ADJUSTMENT

- ① Insert a block gauge (thickness gauge) of thickness  $6.3 \pm 1$  in the gap between the control lever and the idling stopper bolt. (control lever angle :  $10^\circ \pm 2^\circ$  )

- ② With the control lever positioned as described in ① above, adjust the plate position so that the control lever plate and the dash pot push rod are in contact.



## ■ W-CSD Adjustment

### 1) Timer stroke adjustment

1. Calculate the timer stroke from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Adjust using timer stroke adjusting screw so that the timer stroke is as calculated in Step 1.

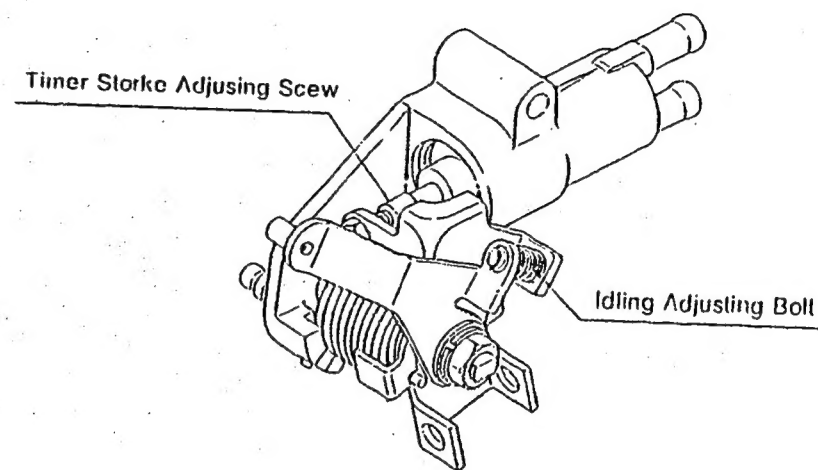


Fig. 1

### 2) CSD lever adjustment

1. Calculate the block gauge dimension  $l \pm 0.05\text{mm}$  from Fig. 2 according to the atmospheric temperature at the time of adjustment.
2. Insert the block gauge (thickness gauge) between the control lever and the idling stopper bolt.
3. Using the idling adjusting bolt, adjust so that the CSD lever and control lever are in contact.

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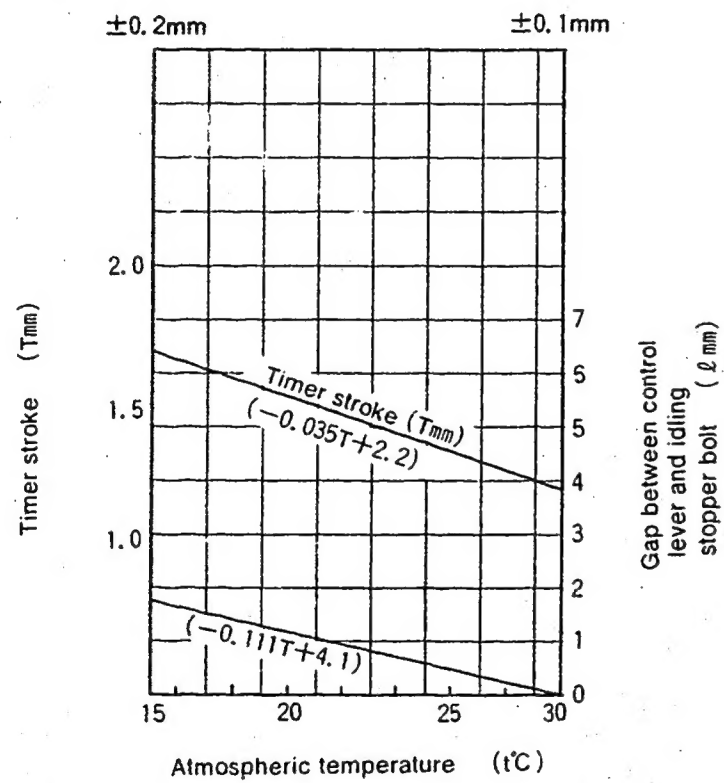


Fig. 2



Table of Contents (BOSCH No. — DKKC No.)

BOSCH No.	DKKC No.	Location	BOSCH No.	DKKC No.	Location
9 460 610 003	104740-3360	WP-212 C-15	9 460 610 107	104749-1350	WP-212 G-6
9 460 610 013	104748-2071	WP-212 E-15~E-16	9 460 610 108	104749-1360	WP-212 G-7
9 460 610 014	104748-2091	WP-212 F-1~F-2	9 460 610 115	104749-1510	WP-212 G-8
9 460 610 015	104749-1020	WP-212 F-15	9 460 610 122	104749-1580	WP-212 G-9
9 460 610 016	104749-1170	WP-212 G-4	9 460 610 123	104749-1590	WP-212 G-10
9 460 610 022	104740-0111	WP-212 B-1	9 460 610 125	104740-2051	WP-212 B-8~B-9
9 460 610 032	104740-3090	WP-212 B-16	9 460 610 130	104740-0112	WP-212 B-1
9 460 610 035	104740-3210	WP-212 C-1	9 460 610 132	104740-2060	WP-212 B-10~B-11
9 460 610 036	104740-3220	WP-212 C-2	9 460 610 133	104740-2070	WP-212 B-12~B-13
9 460 610 037	104740-3250	WP-212 C-3~C-4	9 460 610 163	104740-4311	WP-212 D-14
9 460 610 038	104740-3260	WP-212 C-5~C-6	9 460 610 171	104748-0050	WP-212 D-15~D-16
9 460 610 039	104740-3270	WP-212 C-7~C-8	9 460 610 173	104748-0174	WP-212 E-9~E-11
9 460 610 040	104740-3280	WP-212 C-9~C-10	9 460 610 178	104748-1190	WP-212 E-14
9 460 610 041	104740-3320	WP-212 C-11~C-12	9 460 610 182	104740-0113	WP-212 B-2
9 460 610 042	104740-3330	WP-212 C-13~C-14	9 460 610 187	104740-3610	WP-212 D-4~D-5
9 460 610 043	104740-3410	WP-212 C-16	9 460 610 191	104748-0163	WP-212 E-6~E-8
9 460 610 046	104740-3570	WP-212 D-3	9 460 610 193	104748-0244	WP-212 E-12~E-14
9 460 610 054	104748-0151	WP-212 E-1~E-2	9 460 610 194	104748-2450	WP-212 G-1~G-3
9 460 610 055	104748-0161	WP-212 E-3~E-5	9 460 610 195	104749-2230	WP-212 G-11~G-12
9 460 610 059	104748-2150	WP-212 F-3~F-4	9 460 610 204	104740-2080	WP-212 B-14~B-15
9 460 610 061	104748-2170	WP-212 F-5~F-6	9 460 610 205	104740-3640	WP-212 D-8~D-9
9 460 610 063	104748-2290	WP-212 F-7~F-8	9 460 610 206	104740-3650	WP-212 D-10~D-11
9 460 610 065	104748-2310	WP-212 F-9~F-10	9 460 610 207	104740-3660	WP-212 D-12~D-13
9 460 610 067	104748-2380	WP-212 F-11~F-12	9 460 610 210	104740-3620	WP-212 D-6
9 460 610 069	104748-2400	WP-212 F-13~F-14	9 460 610 211	104740-3630	WP-212 D-7
9 460 610 078	104749-3000	WP-212 G-13~G-15			
9 460 610 095	104740-3430	WP-212 D-1			
9 460 610 096	104740-3541	WP-212 D-2			
9 460 610 100	104740-1120	WP-212 B-3			
9 460 610 101	104740-1130	WP-212 B-4			
9 460 610 102	104740-1140	WP-212 B-5			
9 460 610 103	104740-2041	WP-212 B-6~B-7			
9 460 610 104	104749-1060	WP-212 F-16			
9 460 610 106	104749-1180	WP-212 G-5			

Table of Contents (DKKC No. — BOSCH No.)

DKKC No.	BOSCH No.	Location	DKKC No.	BOSCH No.	Location
104740-0111	9 460 610 022	WP-212 B-1	104748-0161	9 460 610 055	WP-212 E-3~E-5
104740-0112	9 460 610 130	WP-212 B-1	104748-0163	9 460 610 191	WP-212 E-6~E-8
104740-0113	9 460 610 182	WP-212 B-2	104748-0174	9 460 610 173	WP-212 E-9~E-11
104740-1120	9 460 610 100	WP-212 B-3	104748-0244	9 460 610 193	WP-212 E-12~E-14
104740-1130	9 460 610 101	WP-212 B-4	104748-1190	9 460 610 178	WP-212 E-14
104740-1140	9 460 610 102	WP-212 B-5	104748-2071	9 460 610 013	WP-212 E-15~E-16
104740-2041	9 460 610 103	WP-212 B-6~B-7	104748-2091	9 460 610 014	WP-212 F-1~F-2
104740-2051	9 460 610 125	WP-212 B-8~B-9	104748-2150	9 460 610 059	WP-212 F-3~F-4
104740-2060	9 460 610 132	WP-212 B-10~B-11	104748-2170	9 460 610 061	WP-212 F-5~F-6
104740-2070	9 460 610 133	WP-212 B-12~B-13	104748-2290	9 460 610 063	WP-212 F-7~F-8
104740-2080	9 460 610 204	WP-212 B-14~B-15	104748-2310	9 460 610 065	WP-212 F-9~F-10
104740-3090	9 460 610 032	WP-212 B-16	104748-2380	9 460 610 067	WP-212 F-11~F-12
104740-3210	9 460 610 035	WP-212 C-1	104748-2400	9 460 610 069	WP-212 F-13~F-14
104740-3220	9 460 610 036	WP-212 C-2	104748-2450	9 460 610 194	WP-212 G-1~G-3
104740-3250	9 460 610 037	WP-212 C-3~C-4	104749-1020	9 460 610 015	WP-212 F-15
104740-3260	9 460 610 038	WP-212 C-5~C-6	104749-1060	9 460 610 104	WP-212 F-16
104740-3270	9 460 610 039	WP-212 C-7~C-8	104749-1170	9 460 610 016	WP-212 G-4
104740-3280	9 460 610 040	WP-212 C-9~C-10	104749-1180	9 460 610 106	WP-212 G-5
104740-3320	9 460 610 041	WP-212 C-11~C-12	104749-1350	9 460 610 107	WP-212 G-6
104740-3330	9 460 610 042	WP-212 C-13~C-14	104749-1360	9 460 610 108	WP-212 G-7
104740-3360	9 460 610 003	WP-212 C-15	104749-1510	9 460 610 115	WP-212 G-8
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104740-3541	9 460 610 096	WP-212 D-2	104749-2230	9 460 610 195	WP-212 G-11~G-12
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104740-3620	9 460 610 210	WP-212 D-6			
104740-3630	9 460 610 211	WP-212 D-7			
104740-3640	9 460 610 205	WP-212 D-8~D-9			
104740-3650	9 460 610 206	WP-212 D-10~D-11			
104740-3660	9 460 610 207	WP-212 D-12~D-13			
104740-4311	9 460 610 163	WP-212 D-14			
104748-0050	9 460 610 171	WP-212 D-15~D-16			
104748-0151	9 460 610 054	WP-212 E-1~E-2			